SOLICITATION, OFFER AND AWARD	1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFG 700)	RATING DO-C9E	PAGE OF PAGES 1 104

2. CONTRACT NO.	3. SOLICITATION NO.	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NO.
NNA04BA85C	RFP2-38115 (RRG)	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)		4200053250

7. ISSUED BY CODE	8. ADDRESS OFFER TO *(If other than Item 7)*
NASA Ames Research Center Attn: Ronnee R. González, M/S 241-1 Moffett Field, CA 94035-1000	

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder"

SOLICITATION

9. Sealed offers in original and 7 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if hand-carried, in the depository located in **Bldg 227, Room 119** until **1:00 PM** local time, on **January 12, 2004**.

CAUTION — LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-1. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code)* ***(NO COLLECT CALLS)***
	Ronnee R. González	(650) 604-4386; Ronnee.R.Gonzalez@nasa.gov

11. TABLE OF CONTENTS

(✓)	SEC	DESCRIPTION	PAGE(S)	(✓)	SEC	DESCRIPTION	PAGE(S)
		PART I - THE SCHEDULE				PART II – CONTRACT CLAUSES	
	A	SOLICITATION/CONTRACT FORM			I	CONTRACT CLAUSES	
	B	SUPPLIES OR SERVICES AND PRICE/COST			J	LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.	
	C	DESCRIPTION/SPECS./WORK STATEMENT				PART III – LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING				PART IV - REPRESENTATIONS AND INSTRUCTIONS	
	E	INSPECTION AND ACCEPTANCE			K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
	F	DELIVERIES OR PERFORMANCE			L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	G	CONTRACT ADMINISTRATION DATA			M	EVALUATION FACTORS FOR AWARD	
	H	SPECIAL CONTRACT REQUIREMENTS					

SEE FOLLOWING PAGE

OFFER ***(Must be fully completed by offeror)***

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within **180** calendar days *(60 calendar days unless a different period is inserted by the offeror)* from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT *(See Section I, Clause No. 52.232-8)*	10 CALENDAR DAYS	20 CALENDAR DAYS	30 CALENDAR DAYS	CALENDAR DAYS
	N/A %	N/A %	N/A %	N/A %

14. ACKNOWLEDGMENT OF AMENDMENTS *(The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:*	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE
	1	03 Dec 03	3	07 Jan 04
	2	16 Dec 03		

15A. NAME AND ADDRESS OF OFFEROR	CODE 07486	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*
	Sverdrup Technology, Inc. 600 William Northern Blvd. P.O. Box 884 Tullahoma, TN 37388		Rogers F. Starr, President

15B. TELEPHONE NO. *(Include area code)*	☐ 15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
(931) 455-6400		Rogers F. Starr	23 Jan 04

AWARD ***(To be completed by Government)***

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
01 through 04	$19,419,819.00	PPC: BX 4200053250 OBLIGATE: $500,000.00

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:	23. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	ITEM
☐ 10 U.S.C. 2304(c) ( ) ☐ 41 U.S.C. 253(c)( )		25

24. ADMINISTERED BY *(If other than Item 7)* CODE	25. PAYMENT WILL BE MADE BY CODE	CFG:203-18
	NASA Ames Research Center Accounting Operations Branch, Mail Stop 203-18 Moffett Field, CA 94035-1000	

26. NAME OF CONTRACTING OFFICER *(Type or print)*	27. UNITED STATES OF AMERICA	28. AWARD DATE
Ronnee R. Gonzalez	Ronnee González *(Signature of Contracting Officer)*	6/3/04

IMPORTANT -- Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICE/COSTS

B.1 SUPPLIES/SERVICES TO BE PROVIDED (ARC 52.211-94) (FEB 1997)

(a) The contractor shall provide all resources (except as may be expressly stated in this contract as furnished by the Government) necessary to furnish the items below in accordance with the Description/Specification/Work Statement set forth in Section C.

Item No.	Description
01	Aerospace Testing and Facilities Operations and Maintenance for the Phase-In Period set forth in Section F., paragraph F.2 (a), in accordance with the Phase-In Plan.
02	Aerospace Testing and Facilities Operations and Maintenance for the Base Period set forth in Section F., paragraph F.2 (b); including the Contract Data Requirements List set forth in Attachment J.1.(a) 3

(b) Pursuant to Section I, FAR 52.217-9, Option to Extend the Term of the Contract, if exercised, the contractor shall provide all resources (except as may be expressly stated in this contract as furnished by the Government) necessary to furnish the items below in accordance with the Description/Specification/Work Statement set forth in Section C.

Item No.	Description
03	Aerospace Testing and Facilities Operations and Maintenance for Option Period One as set forth in Section F., paragraph F.2 (c); including the Contract Data Requirements List set forth in Attachment J.1.(a) 3
04	Aerospace Testing and Facilities Operations and Maintenance for Option Period Two as set forth in Section F., paragraph F.2 (d); including the Contract Data Requirements List set forth in Attachment J.1.(a) 3

[End of Clause]

B.2 NFS 1852.216-84 ESTIMATED COST AND INCENTIVE FEE (OCT 1996)

01 PHASE-IN PERIOD

The target cost (no fee) of the Phase-In Period is

02 BASE PERIOD

The target cost of this contract is The target fee of this contract is The total target cost and target emplated by the Incentive Fee clause of this contract are $18,596,014.
The maximum fee is
The minimum fee is
The cost sharing for cost underruns is: Government percent; Contractor percent.
The cost sharing for cost overruns is: Government percent; Contractor ercent.

03 OPTION PERIOD ONE

The target cost of this contract is The target fee of this contract is The total target cost and target fee as cont he Incentive Fee clause of this contract are $9,327,887.
The maximum fee is
The minimum fee is
The cost sharing for cost underruns is: Governmen percent; Contractor percent.
The cost sharing for cost overruns is: Government ercent; Contractor percent.

04 OPTION PERIOD TWO

The target cost of this contract is The target fee of this contract is The total target cost and target fee as cont he Incentive Fee clause of this co $18,899,148.
The maximum fee is
The minimum fee is
The cost sharing for cost underruns is: Governmen percent; Contract percent.
The cost sharing for cost overruns is: Government ercent; Contractor percent.

[End of Clause]

B.3 NFS 1852.216-85 ESTIMATED COST AND AWARD FEE (SEPTEMBER 1993)

02 BASE PERIOD:

The estimated cost of this contract is th elineated Claus The maximum available award fee, excluding base fee, if any, is The base fee is Total estimated base fee, and maximum award fee are $823,805.

03 OPTION PERIOD ONE:

The estimated cost of this contract is the same as delineated in Cla . The maximum available award fee, excluding base fee, if any, is The base fee is Total estimated base fee, and maximum award fee are $413,209.

04 OPTION PERIOD TWO:

The estimated cost of this contract is th delineated Claus he maximum available award fee, excluding base fee, if any, is The base fee is Total estimated base fee, and maximum award fee are $837,053.

[End of Clause]

B.4 NFS 1852.232-81 CONTRACT FUNDING (JUNE 1990)

(a) For purposes of payment of cost, exclusive of fee, in accorda********** mitation of Funds clause, the total amount allotted by the Government to this contract is********** This allotment is for the Phase-In and Base Periods, and Option Periods, if exercised, and covers the following estimated period of performance:

July 1, 2004 through August 20, 2004

(b) An additional amount of $50,000.00 is obligated under this contract for payment of fee.

(c) For summary purposes, the total amount obligated under this contract is increased as follows:

	From	By	To
Target Cost	0	**********	**********
Incentive Fee	0	*****	*****
Award Fee	0	**********	**********
Total Fee	0	**********	**********
Total CPIF/AF	0	$500,000.00	$500,000.00

[End of Clause]

B.5 INCENTIVE AND AWARD FEE, APPLICABILITY

The estimated cost for the contract applies to both incentive and award fee portions. Incentive fee will apply to the cost of the Contract Task Order (CTO) and how the Contractor maintains the negotiated cost. Award Fee will be awarded based on completed CTOs and be applicable to Quality, Safety, and Timeliness reviews.

[End of Clause]

CONTRACT VALUE SUMMARY TABLE

	Base Period	Option 1	Option 2	Total
Estimated Cost	**********	**********	**********	**********
Target Incentive Avail.	**********	**********	**********	**********
Earned Incentive Fee	**********	**********	**********	**********
Unearned Award Fee	**********	**********	**********	**********
Earned Award Fee	**********	**********	**********	**********
Total Cost plus all Fee	19,419,819.00	9,741,097.00	19,736,204.00	48,897,120.00

[END OF SECTION]

SECTION C - DESCRIPTION/SPECIFICATION/WORK STATEMENT

C.1 ARC 52.211-93 DESCRIPTION/SPECIFICATION/WORK STATEMENT (FEB 1997) (Modified NOV 2003)

(a) In accordance with the contract's terms and conditions, the Contractor shall furnish all personnel, services, equipment, materials, and facilities and do all other things necessary for, or incidental to performance of the requirements set forth herein.

(b) Work shall be accomplished in accordance with the Statement of Work entitled *Aerospace Testing and Facilities Operations and Maintenance*, as follows:

(End of Clause)

AEROSPACE TESTING AND FACILITIES
OPERATIONS AND MAINTENANCE CONTRACT

STATEMENT OF WORK

C.1.0 Introduction

This statement of work describes the requirement for contract services to be provided to the Research and Development Services and the Aeronautics Directorates at NASA Ames Research Center. The work to be performed includes: testing and facility operation, development projects, operation of support facilities, performance of maintenance and repairs, and administration.

The purpose of this contract is to meet the mission objectives of the aerospace facilities through a partnership between NASA and the Contractor. The mutual goal of this partnership is to satisfy research, development, and commercial needs. The success of research, development, and commercial activities at Ames depends on the successful completion of the work described herein. Therefore, NASA has a vested interest in ensuring that the Contractor succeeds.

C.1.1 Mission Description and Objectives

The ground-based, aerospace test facilities at Ames, which include wind tunnels and high-enthalpy, high-speed Arcjet facilities, support a vast variety and number of experiments. Researchers from Ames, other NASA Centers, other Federal agencies, and from the commercial community utilize these facilities for their testing programs. Virtually every commercially produced aircraft in the United States has been tested in these facilities. In addition, the Arcjet facilities have provided test data for many NASA spacecraft.

The mission of the facility operations organizations is to provide research, development, and commercial customers the use of the facilities and ensure that their test objectives are met. This mission goes beyond conducting high quality test programs and operating facilities to include development of models, new data systems, and other test techniques. A long-range goal of these organizations is to improve the capability of these facilities to better meet customer needs.

Successful completion of the mission requires that services be provided safely and in compliance with environmental requirements. The need for safety in carrying out these services cannot be overemphasized. The testing facilities utilize high-energy sources that present potential risk to personnel and the facilities. The operating organizations maintain documented operations procedures to ensure that the facilities are operated safely and in compliance with environmental requirements.

The facility operations organizations are also committed to providing services in an economical manner. Facility testing is accomplished in an integrated team approach that includes membership from the customer as well as a mix of NASA employees and contract personnel. This allows the organizations to best utilize available resources. While this teaming approach is intended to be transparent to the customer, the distinct roles and responsibilities of NASA and the Contractor can be defined.

The NASA/Contractor team share common mission objectives. Together, NASA and contract personnel must collaborate to successfully conduct research, development, and commercial tests and to improve the testing capabilities at Ames. NASA is committed to provide the Contractor sufficient information and guidance to meet the mission objectives. The Contractor is committed to provide the professional services required for meeting mission objectives.

C.1.2 Facilities

The facilities covered in this Statement of Work include wind tunnels, Arcjets, gas guns, shock tubes, laboratories, and support facilities at Ames Research Center. See Attachment J.1.(a) 5 for a description of these facilities. NASA operates these facilities solely on demand for research and development. The use of these facilities changes with the needs of the research community and industry. The types of facilities covered under this Statement of Work can be categorized as follows:

Test Facilities include, but are not limited to, test chambers, operating systems, drive systems, instrumentation, data acquisition systems, and model mounts. Support facilities are the auxiliaries, model preparation areas, and other support systems devoted to one or more facilities. In some cases, several smaller facilities share drive systems, other support systems, or are housed in a single complex or laboratory. Some facilities have been decommissioned if they are no longer needed or if they are no longer cost effective for the research customers. These facilities may require some minimal ongoing maintenance. Also there are no current plans to reactivate these facilities.

Test Facilities

- Unitary Plan Wind Tunnel (UPWT)
- Arcjet Laboratory
- Fluid Mechanics Laboratory (FML)
- Hypervelocity Free-Flight Facility (HFFF)
- Anechoic Test Chamber/Acoustics Laboratory
- Electric Arc Shock Tube (EAST) Facility
- Ames Vertical Gun Range (AVGR)
- 7X10 Foot Wind Tunnel Number 1

Support Facilities

- Steam Vacuum System (SVS)
- Arc Jet Air System (AJAS)
- High Voltage Electrical Systems
- Blade Shop
- Sting Assembly and Storage Area (SASF)
- Balance Calibration Facility
- Industrial Wastewater Treatment Facility (IWTF)

Inactive Test Facilities

- 2- By 2- Foot Transonic Wind Tunnel (TWT)
- 3.5-Foot Hypersonic Wind Tunnel
- National Full-Scale Aerodynamic Complex (NFAC)
- 12-Foot Pressure Wind Tunnel (PWT)
- 14-Foot Transonic Wind Tunnel
- 6- By 6- Foot Supersonic Wind Tunnel (SWT)
- Underground Ballistic Range
- Pressurized Ballistic Range
- 7X10 Foot Wind Tunnel Number 2
- High Reynolds Channels #1 & #2 (HRC)
- Outdoor Aerodynamic Research Facility (OARF)
- Propulsion Simulator Calibration Laboratory (PSCL)

C.2.0 Scope

This Statement of Work describes the services required to plan, prepare, and conduct tests, to plan and implement development projects, to operate, maintain, and repair the facilities, and the support required to administer the preceding. This Statement of Work does not define the quantity of work to be performed; however, this contract is structured so that the Contractor will be able to determine required services. Contract Task Orders will be used to define the services or deliverables and their quantities to be provided by the Contractor.

Successful completion of the mission requires the combined effort of, and extensive interaction between, NASA and the Contractor. The work described in this Statement of Work will be accomplished by NASA, the Contractor, or shared by means of mixed Contractor/NASA test and project teams. The Contractor will be responsible for determining the type of skills and skill mix, and materials required to provide their portion of testing, development, and general services. The Contractor will also be responsible for managing its resources to achieve the desired outcomes. The Contractor shall provide labor and materials as required to provide the services and outcomes.

The services available under this contract can be provided to any customer as approved by the Contracting Officer if in the best interest of the Government. These services may also be provided to other facilities at Ames Research Center, or other installations if needed, in order to complete the mission. In general, however, the services provided under this contract will pertain to the facilities listed in Section C.1.2.

C.2.1 Obtaining Services

NASA will issue Contract Task Orders (CTOs) for the purpose of defining the services to be provided by the Contractor. NASA will provide schedules of tests and projects for each CTO period. During the process of defining each CTO, the roles and responsibilities of both NASA and the Contractor will be defined so that the work to be provided by the Contractor can be quantified and evaluated based on performance.

C.2.2 Creating a NASA/Contractor Partnership

The goal of the NASA/Contractor partnership is to foster an environment conducive to mutual success. To this end, NASA is prepared to share corporate knowledge, participate in informal discussion, solicit feedback, and coordinate resources with the Contractor. (However, due to the sensitive nature of operations, management information including operations costs, customers and their tests, pricing, etc. is not to be shared with other business units of the incumbent performing similar work at other sites without prior coordination from Ames.) The partnership will also serve as a forum for open discussion in an effort to achieve the following objectives:

- Operating safely and in environmental compliance
- Producing quality work
- Accomplishing the mission within allocated budget
- Adhering to schedules
- Resolving issues expeditiously and fairly without confrontation or litigation
- Developing trust and open communications
- Improving performance in all of the above

The Contractor shall participate with the Government in the partnership to upgrade and maintain required plans, procedures, and work instructions in order to obtain and maintain third-party certification of the processes used to ensure quality to the customer.

The partnership is not intended to inhibit the ability of either partner to manage its staff. The partnership does not alter either partner's legal rights and obligations as defined by the contract. The partnership is a mutual understanding that both parties are committed to a common goal of meeting the mission objectives.

C.3.0 Requirements

`The requirements of this contract are organized into three Performance Areas: Testing, Development, and General Services. These Performance Areas are further divided as follows:

Testing Services:
- Test Planning
- Test Preparation
- Test Operations
- Post-test Operations

Development Services which include projects of the following types:
- Test/Diagnostic Techniques
- Facilities
- Data Systems
- Model/Test Apparatus

General Services which includes:
- Operation of Support Facilities
- Maintenance & Repairs
- Administration

Within this Statement of Work, service descriptions may include bulleted lists. Although not comprehensive, these lists describe some of the major activities within the service.

NASA anticipates that a wide variety of skills will be required to successfully perform the services described in this Section. Further, NASA expects that Contractor personnel will consist of engineers and technicians of various disciplines, test and project managers, crafts-persons, managers, supervisors, and administrative support persons.

In order to meet NASA's objectives, the Contractor may, at times, be required to provide all or portions of these services twenty-four hours a day, including weekends and holidays. In addition, these services may be provided to other NASA facilities, installations, or other Government Agencies. However, the services provided that do not pertain to the facilities listed in Section C.1.2 will not represent a significant component of this contract.

The Contractor shall follow applicable Government (including State and Local) and NASA standards and regulations. Additionally, the Contractor shall comply with all applicable health, safety, and environmental protection laws and regulations. For continuity and safety, the Contractor shall adhere to facility management procedures and Standard Operating Procedures (SOPs). NASA expects the Contractor to recommend changes to these facility procedures to improve safety and performance or reduce costs. However, NASA retains the right to approve changes in order to preserve and protect the facilities.

Many procedures and records that are used in performing the mission are regularly audited and certified by third-party organizations. ISO and VPP are two examples of third-party reviews that are currently performed. NASA expects the combined Government/Contractor organization supporting the ground-based facilities at ARC to continue to be ISO compliant during the life of this contract.

C.3.1 Testing Services

Aeronautics and Space Transportation testing is one of the primary missions of Ames Research Center. The goal of the testing organization is to safely meet the research, development, or commercial customer's requirements on time at the lowest possible cost. Therefore constant communication is required at all times between NASA, the customer, and the Contractor.

Testing services are comprised of the four phases of a test in ARC's facilities: Test Planning, Test Preparation, Test Operations, and Post-test Operations. The sections describing these phases include the goals, a general description of the process, and work requirements to successfully carry out a test. During these phases, the schedule, cost, test requirements, and data accuracy need to be continually reviewed and balanced.

NASA and Contractor management will agree on the lead responsibility for a given test. This will occur when a test is approved by NASA (with inputs from its Contractor partner). Either a NASA or Contractor Test Manager will then be assigned. The Test Manager is responsible for overall project success and will be expected to:

- Manage available resources, budget, and approve changes
- Facilitate completion of work performed by other disciplines
- Facilitate coordination between disciplines
- Facilitate resolution of problems
- Report to customer, Contractor and NASA Management on status
- Oversee Safety and Mission Assurance process
- Provide a single point of contact for test matters
- Facilitate system integration and testing activities

C.3.1.1 Test Planning

The main goal of test planning is for NASA, the Customer, and the Contractor to agree on test requirements, schedule, and the responsibility for tasks and deliverables. Test planning begins after the test request has been approved by NASA management and ends when a Customer Agreement and a Space Act Agreement (if required) are generated by the test team and are signed by the NASA test team and the Customer. The Customer Agreement is based on initial Customer requirements and indicates the agreed upon roles and responsibilities of the NASA test team and the Customer.

An additional goal of test planning is to develop tasks, schedules, milestones, and associated cost estimates for all work so that the test can be carried out effectively. This planning supports the subsequent test preparation, test operations, and post-test phases of the test, but does not include detailed implementation plans/designs/documents, which are developed during test preparation. This phase may include planning for model modifications, minor facility changes, and other engineering activities. Major facility changes or model development will typically be executed under Section C.3.2, Development Services.

Initially, the test team may consist of only the Test Manager and Customer representatives. As needed, technical leads from other disciplines will support the effort to develop the Customer Agreement.

In accordance with CTOs the Contractor shall:

C.3.1.1.1 Prepare a Customer and Space Act Agreement

- Review and optimize customer requirements
- Conduct Initial Test Planning Meeting
- Define approach to meeting customer requirements necessary to meet the required objectives
- Obtain NASA and Customer approval

C.3.1.1.2 Generate a Task and Resource Plan which outlines the approach to meeting the technical objectives throughout the test phases. The Task and Resource Plan requires Government approval. The Task and Resource Plan shall:

- Include plans for calibration and checkout of instrumentation, programming and checkout of software, design, procurement, fabrication, assembly, and checkout of subsystems to meet customer requirements
- Include estimates for costs, labor, schedule, equipment and material by task
- Identify and address special matters pertaining to Safety, Environmental, and Mission Assurance, configuration management, maintenance, facilities integrity, and Injury Prevention Plan
- Identify and address known technical and cost risks associated with the Contractor's proposed approach and offer alternatives for consideration by NASA and the customer

C.3.1.2 Test Preparation

The goal of Test Preparation is to bring all required systems and documents to a state of readiness for the agreed-upon test date. Test preparation begins with an approved Customer Agreement and includes all detailed preparation through the Test Readiness Review (TRR) and end-to-end check-out of test-related model and facility systems.

NASA and the customer must be kept updated on the test team's progress and will be involved in resolving issues. Since some evolution of requirements is unavoidable, the Customer and the test team will work to accommodate changes to the requirements. It is a joint responsibility of the Customer and the NASA/Contractor team to iterate on those requirements that either 1) were difficult to determine in the planning phase of the test or 2) prove difficult to achieve during test preparation. The objective of this iteration should be that test requirements are satisfied with the optimum balance between accuracy/scope and impacts to cost/schedule. During this phase, all parties will agree to revised requirements.

In accordance with CTOs the Contractor shall:

C.3.1.2.3 Complete all design and test documentation as defined in the Test Process Manual

- Complete test plan, test safety analysis report, and quality assurance plan
- Complete an Instrumentation Test Plan
- Complete Software and Hardware Design Documents
- Complete Facility Design Documents
- Complete Data Systems User Guide
- Complete Model Controls Design Documents

C.3.1.2.2 Complete development, fabrication, installation and end-to-end functionality checks for all new or modified model and facility systems, including but not limited to:

- instrumentation
- data-acquisition and specialized model system software including test-dependent or user-supplied software
- data systems including user-supplied hardware
- model controls including user-supplied model controls
- model and associated mounting hardware
- facility modifications

C.3.1.2.3 Conduct Test Readiness Review and Test Safety Review

- Close all action items

C.3.1.2.4 Train test and facility personnel on model and facility hardware, software, and operations

C.3.1.3 Test Operations

The main goal of Test Operations is to utilize the available facility time to safely and productively satisfy the customer's research, development, and commercial objectives. This phase begins after completion of end-to-end checkout of required model and facility systems and ends with completion of the last data run. During this phase the test team must continually balance the following competing factors: data quality and repeatability, model and other configuration changes, unforeseen problems, trouble shooting, and changes in run schedule and objectives. The test team continually optimizes the run schedule as the test evolves to maximize value from the available facility time. Additionally, facilities allow for concurrent test operations. The test team must coordinate with other test teams concerning use of the shared facility systems. Finally, the test team must also communicate the status of test operations to NASA management. Tests may be extended to recover lost facility time or changes in test objectives.

The Contractor is responsible for operating each facility, and its plants or auxiliary systems, in accordance with its Standard Operating Procedures (SOPs). Facility Operators and Shift Engineers shall be certified according to the organization's training and certification plan.

In accordance with CTOs the Contractor shall:

C.3.1.3.1 Operate facilities and conduct test runs to meet customer test objectives

- Complete monitoring checks necessary to assure model and facility systems remain functional and data is accurate
- Follow written plans and procedures for facility operation
- Achieve target test productivity, in balance with meeting test objectives

C.3.1.3.2 Complete test operations safely

C.3.1.3.3 Complete and document repairs and changes to test related hardware and software

C.3.1.3.4 Collect and archive raw data and provide reduced data to customer during test operations

C.3.1.4 Post-Test Operations

The main goals of Post-Test Operations are to deliver the final data set to the customer and restore the facility systems to their baseline configuration. An additional goal is to document lessons learned and recommendations from the test team. This phase begins after completion of the last data run and ends with the delivery of the data and the test debriefing of the customer and test team.

In accordance with CTOs the Contractor shall:

C.3.1.4.1 Transmit final data to customer per Customer Agreement

C.3.1.4.2 Complete final Test Documentation, including documents describing modifications to facility made to support the test

C.3.1.4.3 Document lessons learned, and propose changes to procedures

C.3.1.4.4 Return facility to the base-line configuration

- Remove instrumentation and return to inventory or customer
- Remove and return model-related hardware to inventory

C.3.1.4.5 Conduct test debriefing

C.3.2 Development Services

This section describes work that enhances NASA's ability to successfully carry out tests in a cost effective and safe manner. This work may be associated with specific tests or may be tied to overall improvement of Aerospace testing or a facility. Project types include:

- Test/Diagnostic Techniques Development
- Data Systems Development
- Facility Development
- Model/Test Apparatus Development

Test/Diagnostic Techniques and Data Systems development projects satisfy the need to acquire more data and more accurate data to meet changing research, development, and commercial requirements. Facility development projects are generally focused on improving the capabilities of the facilities. Model/Test Apparatus development projects are associated with test models and apparatus and typically support a testing program.

NASA and Contractor management will agree on the lead responsibility for a given project. This will occur when NASA approves, with inputs from its Contractor partner, a project. Either a NASA or Contractor Project Manager will then be assigned. The Project Manager is responsible for overall project success and will be expected to:

- Manage available resources, budget, and approve changes
- Facilitate completion of work performed by other disciplines
- Facilitate coordination between disciplines
- Facilitate resolution of problems
- Report to customer and NASA Management on status
- Oversee Safety Environmental, and Mission Assurance process including risk management
- Provide a single point of contact for project matters
- Facilitate system integration and testing activities

Like Testing Services, project teams will be assembled from Government and Contractor personnel from the relevant disciplines required to complete the project as prescribed in CTOs. Initially, the project team may consist of only the Project Manager, technical leads and customer representatives. The project team will expand to include technicians, mechanics, and other personnel from the other disciplines, as required during the project. In addition these teams may include other NASA contractors depending on the nature of the project.

Development projects consist of three phases: Planning and Design, Implementation, and Checkout. The goal of the Planning and Design phase is to produce a safe and high quality design that meets test/project, Customer, or facility requirements. This phase includes performing studies, developing project plans, conceptual, preliminary, and final designs, and developing prototypes. The Project Team may be responsible for developing requirements documents, managing and participating in design reviews, and developing cost estimates for all stages of design.

The goal of the Implementation phase is to complete any procurement, fabrication, assembly, and installation needed to satisfy the design requirements. The Project Team may be required to perform in-process inspections during this phase. Implementation may be performed by the NASA/Contractor team, Contractor team, or by third party contract staff. During the course of implementation, design changes may be required. The Project Team may be responsible for changing the design, for coordinating the review process, and for documenting and implementing these changes.

The goal of the checkout phase is to ensure that implementation is complete and requirements have been met. This phase includes all activities associated with subsystem checks, final inspections, Integrated Systems Tests (IST), training, and documentation, and the planning of these activities. On occasion, checkout may require specialized expertise, e.g., ultrasonic testing, radiographic inspections, chemical engineering, materials engineering, aerodynamicist, etc. and the Project Team may be required to provide or coordinate these services. Depending on the project magnitude, checkouts may range from formal planning and implementation for complex projects, to subsystem operational checks for less complex projects. Checkout for a project may require adherence to formal, documented procedures. Checkouts may also generate data that will validate the design. The Project Team may be responsible for acquisition and/or reduction of this data. For economy and schedule efficiency, testing and checkout of new systems/techniques developed under this section may be coupled with a testing program.

During all project phases, the schedule, cost, and project requirements are continually reviewed and adjusted. Therefore a high degree of communication is required at all times between NASA, the customer, and the Contractor.

Configuration management is crucial to project success. The configuration management process currently in use is defined in "Configuration Management Procedures Document Number AO27-9391-XB4" and the Thermophysics Facilities Configuration Management Plan.

C.3.2.1 Development Project Types

Development Services will be used to complete Test/Diagnostic Techniques Development, Facility Development, Data Systems Development, Model/Test Apparatus Development projects.

The goal of Test/Diagnostic Techniques Development is to develop, and support the ongoing evolution of new test methods for the research, development, and commercial community. Some projects may involve developing and validating new instrumentation types, data collection concepts, and diagnostic techniques, such as flow visualization. Other projects may relate to the study and improvement of test operations with the intention of maximizing the overall research value of data obtained during a test.

The goal of Facility Development is to provide facility enhancements to better meet customer needs. Facility Development projects may support a specific test or research program, or may be driven by future needs.

The goal of Data Systems Development is to design and implement hardware and software systems for new data acquisition and reduction capabilities that enhance testing. Included in data systems are components such as file storage units, central processors, operating and data reduction software, monitors, printers, cabling, field interface panels, analog to digital converters, and sensing instrumentation that comprise a complete working system. These projects are typically commissioned to implement the latest technologies in the field of computerized data collection and reduction as it applies to aerospace testing.

The goal of Model/Test Apparatus Development is to produce models and test apparatus, such as mounting hardware, test platforms, and test specific auxiliary systems that meets customer requirements. The Contractor may be responsible for the design, fabrication oversight, and testing necessary for model and test apparatus development.

C.3.2.2 Development Project Requirements

In accordance with CTOs, the Contractor shall:

C.3.2.2.1 Complete Project Plans and Designs.

- Develop Project Requirements Document with detailed cost estimate and schedule
- Produce Project Plan detailing work breakdown structure, resource requirements and their allocation
- Complete Studies, Conceptual Design, Design Reviews, and Final Design
- Complete Safety, Environmental, and Mission Assurance analysis

C.3.2.2.2 Complete the Project Implementation/Installation

- Complete fabrication, software programming, assembly, and installation
- Complete required Quality Assurance / Quality Control activities
- Complete personnel training

C.3.2.2.3 Complete the Project Checkout.

- Complete and document repairs and changes
- Ensure that project results are consistent with project requirements
- Plan and perform an integrated systems test and participate in final reviews necessary to qualify system readiness
- Develop project documentation and update facility information documents
- Conduct closeout activities

C.3.3 General Services

This section describes work that supports testing and development services, maintains the facilities at an operational status, and provides overall contract administration. Services include: Operation of Support Facilities, Maintenance and Repair, and Administration (Sections C.3.3.1, C.3.3.2, and C.3.3.3, respectively). Operation of Support Facilities includes services needed to provide utility support to the aerospace test facilities. Maintenance and Repair work is performed to keep aerospace and support facilities and their subsystems operationally ready. Administration activities include a wide-range of management and logistical services that are required for the execution of this contract.

The Contractor will have primary responsibility to provide the services described in this section. Unlike Testing and Development Services that may be performed by mixed NASA/Contractor teams, General Services will be primarily provided by the Contractor.

C.3.3.1 Operation of Support Facilities

The goal of support facility operations is to provide utilities or other support functions required for testing in the aerospace facilities. The Contractor shall operate and manage these support facilities. The Contractor shall coordinate short term and long term operations with test and facility management. Additionally, the Contractor shall coordinate the planning and implementation of maintenance, calibration, and repair activities that are described in Section C.3.3.2. Operators shall be certified according to the organization's ISO training and certification plan.

The three major support facilities are the Steam Vacuum System (SVS), the Arc Jet Air System (AJAS), and the High Voltage Electrical System. These systems are high-energy sources that have potential for serious hazards. Therefore, the Contractor shall adhere to existing and future safety programs and procedures.

Other support facilities are operated as test laboratories, are used for preparing for aerospace tests, or for the treatment of industrial waste water from the test facilities. These facilities perform various functions to allow the actual aerospace tests to be conducted.

In accordance with CTOs, the Contractor shall:

C.3.3.1.1 Operate the Support Facilities to ensure that utilities or functionality is available to the aerospace facilities when needed.

C.3.3.1.2 Coordinate the demand for the utilities or functions with aerospace facility operational personnel and NASA management to ensure that utilities will be available to the aerospace facilities when needed.

C.3.3.1.3 Restore Support Facilities to operational status in the event of unforeseen circumstances or emergencies.

C.3.3.1.4 Ensure that no safety or environmental regulation violations occur during performance of this work.

C.3.3.1.5 Coordinate maintenance, repair, and calibration of the Support Facilities provided under Section C.3.3.2. to ensure that utilities or functionality will be available to the aerospace facilities when needed.

C.3.3.2 Maintenance and Repairs

The goal of Maintenance and Repairs is to ensure that the facilities covered under this contract are operationally ready when required. The work described in this section includes those activities required to keep the aerospace test and support facilities operationally ready. Calibration activities are considered to be part of maintenance services. Services under this section apply to facility systems, sub-systems, equipment and components. This includes structural, electrical, mechanical, and controls aspects of the facilities as well as data acquisition and reduction systems and computers.

Currently some maintenance and repair activities are performed by other Ames organizations. The Contractor shall request services from, and schedule with, these other organizations as required. The Contractor shall coordinate maintenance and repair work with these other organizations to avoid redundant facility shutdowns for maintenance purposes. These services include, but are not limited to the maintenance, calibration and repair of precision tools, electro-mechanical protective devices, pressure relief/control devices, overhead cranes, rigging hardware, scale systems, and spare parts and tools that are kept in storage.

The Contractor is expected to perform maintenance and repair services on equipment according to the design specifications, manufacturer's recommendations, and relevant ARC manuals unless the COTR approves an alternate approach.

The Government's current process for aerospace facility maintenance is described in Wind Tunnels Maintenance Manual (Doc. No. AO27-9391-XB5). Additionally, some specific maintenance related information is contained in the SOP documents developed for each aerospace test and support facility. As part of the continuing improvement of the maintenance and repair programs, the Contractor may propose a new Computerized Maintenance Management System (CMMS) or changes to existing procedures. Included in these documents are descriptions and specific requirements for the following:

- A CMMS is used to schedule and track facility maintenance and repair. The database currently used is the MAXIMO® Maintenance System by Project Software and Development, Inc. of Cambridge, Massachusetts.

- A Reliability Centered Maintenance (RCM) program including the following types:
  - Predictive Testing and Inspection (PT&I)
  - Condition Based Maintenance (CBM)
  - Preventive Maintenance (PM)
  - Corrective Maintenance (repairs and minor improvements)

In accordance with CTOs, the Contractor shall:

C.3.3.2.1 Ensure that Test and Support Facilities are operationally ready.

- Make efficient use of Maintenance and Repair shutdowns
- Perform Maintenance and Repairs to avoid unscheduled facility shutdowns
- Respond to unforeseen events/emergencies to restore facilities to operational status
- Identify and communicate to NASA the root cause(s) for facility failures

C.3.3.2.2 Develop Long Term Maintenance and Repair Plans.

- Perform Condition based analysis and studies
- Develop RCM based Long term Maintenance and Repair Program strategy
- Develop, maintain, and communicate to NASA a prioritized list of repair needs with justifications

C.3.3.2.3 Implement a RCM-based Maintenance and Repair Program.

- Implement improved Maintenance techniques
- Design, install and operate Diagnostic Maintenance Systems
- Update CMMS maintenance procedures
- Train personnel on maintenance techniques and procedures

C.3.3.2.4 Complete Maintenance and Repair Work.

- Operate CMMS to schedule maintenance work
- Coordinate and schedule maintenance and repair work to be performed by others
- Perform Maintenance and Repair work to standards
- Check out systems prior to reactivation
- Perform Maintenance and Repair work without safety or environmental violations

C.3.3.2.5 Document Maintenance and Repair work.

- Maintain accurate and up-to-date CMMS history
- Maintain accurate and up-to-date field-located log books
- Update facility configuration changes per established procedures

C.3.3.3 Administration

The goal of Administration is to ensure that the following services are effectively managed and implemented to support all activities covered in this Statement of Work. These services include, but are not limited to: Resource Scheduling, Property Management, Procurement, Safety, Environmental, and Mission Assurance, Contract Reporting, Configuration Management, and IT System Administration.

In accordance with the CTO, the Contractor shall provide the following Administrative Services:

C.3.3.3.1 Resource Scheduling:

Assist in the definition, implementation, operation and maintenance of a resource scheduling system for NASA and Contractor resources that are allocated for activities performed under this contract. This system will track the resources and assist in planning future allocation.

C.3.3.3.2 Property Management:

The Contractor shall ensure that consumables, equipment, tools, and parts required for testing, development, and maintenance and repairs are accounted for, available, and ready when needed.

The current Property Management process includes the "Property Manual (Doc. No. A027-9791-XB1), NASA Equipment Management System (NEMS); and Calibration Recall System.

The Contractor's Property Management shall provide, but not be limited to:

- A property control process that satisfies requirements of the NEMS
- A calibration recall process
- A tool checkout system
- A spare parts inventory system

C.3.3.3.3 Procurement:

The Contractor shall procure subcontract services, consumables, equipment, tools, and parts, such that they are available when required and meet stated specifications.

- Comply with the Federal Acquisition Regulations (FAR), NASA FAR Supplement
- Meet or exceed Subcontracting Plan Goals

C.3.3.3.4 Safety and Environmental Compliance:

The Contractor shall ensure compliance with institutional safety and environmental regulations for all performance under this contract.

- All appropriate personnel are trained in procedures, policies, and practices in accordance with current NASA, ARC, OSHA, EPA, and other applicable federal, state, and local regulatory agency standards
- All operators of equipment that are required to be licensed and/or certified have current licenses/certifications
- Participate with NASA in safety inspections and safety awareness training in accordance with Ames Safety Accountability Program

C.3.3.3.5 Contract Reporting:

The Contractor shall deliver all reports in accordance with Section J.1 (a) 3 of this contract. These reports shall be current, accurate, and complete.

C.3.3.3.6 Configuration Management:

The Contractor shall administer and operate a Configuration Management system. Current processes are described in Configuration Management Procedures Document Number A027-9391-XB4.

This system identifies, tracks, audits, and provides change control for facility documents, such as: design drawings, as-built drawings, base-line design documents, operation and maintenance (O&M) manuals, standard operating procedures (SOPs), and other ISO documentation.

C.3.3.3.7 IT Systems Administration:

The Contractor shall administer various business and mission specific IT computer systems for organizations using this contract to ensure availability when required. These systems include, but are not limited to desktop, data storage and application servers, and facility/data control systems. The Contractor shall perform these functions in accordance with approved IT security plans. Required activities include, but are not limited to:

- Installing, repairing, and maintaining hardware and software
- Installing Hardware and Software upgrades
- Providing technical support and resolve hardware and software problems
- Protecting the above systems from unauthorized intrusion by foreign systems, hackers, and viruses
- Performing system backups such that no critical information or wind tunnel data is lost
- Managing accounts
- Managing facility specific intranets

C.4.0 PHASE-IN/PHASE-OUT

This section describes requirements to be fulfilled by the Contractor in order to transition into day-to-day operations after contract award and requirements for turning over operations to NASA at the completion of the contract.

C.4.1 Phase-In

The phase-in process shall be accomplished expeditiously and in a manner consistent with safe operation. The phase-in process shall preclude any interruption of the scheduled operation of any of the facilities listed in the Statement of Work. The Contractor shall be responsible for providing a qualified staff with required certifications, or certifications in process, by the end of the phase-in period. The Contractor shall be responsible for working with NASA in the Partnership as described in Section C.2.2.

During the Phase-in, the Contractor is expected to aggressively support the partnership in the formulation and documentation of specific plans and policies for safety, training and quality.

C.4.2 Phase-Out

The Contractor is responsible for the orderly transfer of duties and records to the incoming Contractor. This shall be accomplished in an expeditious manner, consistent with the phase-in schedule, while precluding interruption of the scheduled operation of any of the facilities listed in the Statement of Work. The Contractor shall ensure that complete equipment, systems, and facility logs are passed to the incoming Contractor.

C.4.3 Schedule

No later than 60 calendar days, from the beginning of the phase-in period, the staff of the incoming Contractor shall be fully qualified and certified, or certification procedures begun, to accomplish the requirements of the contract. The incoming Contractor shall present a written Status Report to the COTR. Contractual records and material shall have been transferred to NASA, catalogued and assimilated to the point that uninterrupted performance of the contract is assured. During Phase-out, the Contractor shall have transferred all records and documentary material in an orderly manner and vacated all areas of Contractor responsibility, having left them in a clean, professional state and having completed the check-out process.

C.5.0 ABBREVIATIONS AND ACRONYMS

AHB	Ames Handbook
AJAS	Arc Jet Air System
APD	Ames Policy Directive
APG	Ames Policy Guideline
APMS	Ames Power Management System
ARC	Ames Research Center
AVGR	Ames Vertical Gun range
BalCal	Balance Calibration Laboratory
CBI	Confidential Business Information
CBM	Condition Based Maintenance
CMAR	Contractor's Monthly Accident Report
CMMS	Computerized Maintenance Management System
CO	Contracting Officer
COTR	Contracting Officer's Technical Representative
CPIF/AF	Cost-Plus-Incentive-Fee/Award-Fee
CTO	Contract Task Order
DoD	Department of Defense
EAST	Electric Arc Shock Tube Facility
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
FML	Fluid Mechanics Laboratory
GFP	Government Furnished Property
HBCU/MI	Historically Black College or University/Minority Institution
HFFF	Hypervelocity Free-Flight Facility
HRC	High Reynolds Number Channel
ISO	International Standardization for Organization
IST	Integrated Systems Tests
IWTF	Industrial Wastewater Treatment Facility
MUA	Make-Up Air
NASA	National Aeronautics and Space Administration
NEMS	NASA Equipment Management System
NFAC	National Full-Scale Aerodynamic Complex
O&M	Operation and Maintenance
OARF	Outdoor Aerodynamic Research Facility
ODIN	Outsourcing Desktop Initiative for NASA
OSHA	Occupational Safety and Health Administration
PM	Preventive Maintenance
PT&I	Predictive Testing and Inspection
PSCL	Propulsion Simulator Calibration Laboratory
PWT	Pressure Wind Tunnel
RCM	Reliability Centered Maintenance
SDS	Standard Data System
SOP	Standard Operating Procedure
SOR	Statement of Requirements
SOW	Statement of Work
SEMA	Safety, Environmental, and Mission Assurance
SVS	Steam Vacuum System
SWT	Supersonic Wind Tunnel
TRR	Test Readiness Review
TWT	Transonic Wind Tunnel
UPWT	Unitary Plan Wind Tunnel

[END OF SECTION]

SECTION D - PACKAGING AND MARKING

D.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE

NOTICE: The following contract clauses pertinent to this section are hereby incorporated by reference:

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

CLAUSE

NUMBER DATE TITLE

None included by reference.

II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

CLAUSE

NUMBER DATE TITLE

None included by reference.

(End of Clause)

D.2 PACKAGING AND MARKING (ARC 52.211-95) (FEB 1997)

(a) The Contractor shall pack and mark all hardware deliverable under this contract in accordance with the provisions of NASA Handbook (NHB) 6000.1, Requirements for Packaging, Handling, and Transportation, and/or MIL-STD-2073-1 and MIL-STD-2073-2, as applicable, except as noted below:

NONE

(b) The Contractor shall pack potentially hazardous items in accordance with paragraph 204 of NHB 6000.1.

(c) The Contractor shall develop packaging, handling, and transportation records, if required, from engineering and packaging data. The Contracting Officer's technical representative is the approving official of the records and special packaging data under paragraph 302 of NHB 6000.1.

(d) The Contractor's packaging specifications or procedures may be utilized if they are (i) not in conflict with cited NASA specifications and (ii) approved in writing by the Contracting Officer. In any conflict between NASA and the Contractor specifications or procedures, the NASA documents cited in this clause shall take precedence.

(e) The Contractor shall place identical requirements on all subcontracts.

(End of clause)

[END OF SECTION]

SECTION E - INSPECTION AND ACCEPTANCE

E.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE

NOTICE: The following contract clauses pertinent to this section are hereby incorporated by reference:

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

CLAUSE NUMBER	DATE	TITLE
52.246-3	MAY 2001	INSPECTION OF SUPPLIES-- COST-REIMBURSEMENT
52.246-5	APR 1984	INSPECTION OF SERVICES-- COST-REIMBURSEMENT

II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

CLAUSE NUMBER	DATE	TITLE
1852.246-72	AUG 2003	MATERIAL INSPECTION AND RECEIVING REPORT

(End of clause)

[END OF SECTION]

SECTION F - DELIVERIES OR PERFORMANCE

F.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE

NOTICE: The following contract clauses pertinent to this section are hereby incorporated by reference:

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

CLAUSE NUMBER	DATE	TITLE
52.242-15	AUG 1989	STOP-WORK ORDER (ALTERNATE I) (APR 1984)
52.247-34	NOV 1991	F.O.B. DESTINATION

II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

CLAUSE NUMBER	DATE	TITLE

None included by reference.

(End of Clause)

F.2 ARC 52.211-100 PERIOD OF PERFORMANCE (JUL 1997)

(a) PHASE-IN PERIOD
The Phase-in period of this contract shall be from July 1, 2004 through July 31, 2004.

(b) BASE PERIOD
The base period of performance of this contract shall be from August 1, 2004 through July 31, 2006.

(c) OPTION PERIOD ONE
If exercised, the period of performance shall be for twelve (12) months from the end of the Base Period.

(d) OPTION PERIOD TWO

If exercised, the period of performance shall be for twenty-four (24) months from the end of Option Period One.

[End of Clause]

F.3 ARC 52.237-90 PLACE OF PERFORMANCE (JUL 1988)

The place of performance for the work required under this contract shall be at Moffett Field, CA 94035-1000 and at such other locations as may be directed by the Contracting Officer. The Contractor may be required to perform work, within the scope of the Statement of Work, at other sites.

[End of Clause]

[END OF SECTION]

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE

NOTICE: The following contract clauses pertinent to this section are hereby incorporated by reference:

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NONE INCLUDED BY REFERENCE

II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

CLAUSE NUMBER	DATE	TITLE
1852.227-70	MAY 2002	NEW TECHNOLOGY
1852.242-71	DEC 1988	TRAVEL OUTSIDE OF THE UNITED STATES
1852.242-73	JUL 2000	NASA CONTRACTOR FINANCIAL MANAGEMENT REPORTING
1852.245-70	JUL 1997	CONTRACTOR REQUESTS FOR GOVERNMENT-OWNED EQUIPMENT
1852.245-71	JUN 1998	INSTALLATION-ACCOUNTABLE GOVERNMENT PROPERTY, Alternate I (MAR 1989), insert N/A in paragraph (a)
1852.245-77	JUL 1997	LIST OF INSTALLATION-ACCOUNTABLE PROPERTY AND SERVICES

(End Of Clause)

G.2 AWARD FEE FOR SERVICE CONTRACTS (NFS 1852.216-76) (JUN 2000)

(a) The contractor can earn award fee from a minimum of zero dollars to the maximum stated in NASA FAR Supplement clause 1852.216-85, "Estimated Cost and Award Fee" in this contract.

(b) Beginning 6 months after the effective date of this contract, the Government shall evaluate the Contractor's performance every 6 months to determine the amount of award fee earned by the contractor during the period. The Contractor may submit a self-evaluation of performance for each evaluation period under consideration. These self-evaluations will be considered by the Government in its evaluation. The Government's Fee Determination Official (FDO) will determine the award fee amounts based on the Contractor's performance in accordance with the performance evaluation plan. The plan may be revised unilaterally by the Government prior to the beginning of any rating period to redirect emphasis.

(c) The Government will advise the Contractor in writing of the evaluation results. The payment office will make payment based on the issuance of unilateral modification by contracting officer.

(d) After 85 percent of the potential award fee has been paid, the Contracting Officer may direct the withholding of further payment of award fee until a reserve is set aside in an amount that the Contracting Officer considers necessary to protect the Government's interest. This reserve shall not exceed 15 percent of the total potential award fee or $100,000 whichever is less.

(e) The amount of award fee that can be awarded in each evaluation period is limited to the amounts set forth below.

EVALUATION PERIOD	FROM	TO	AWARD FEE AVAILABLE
BASE PERIOD (includes Phase-In month with no fee)			
FIRST	July 1, 2004	January 31, 2005	To Be Determined (TBD) by Task Order
SECOND	February 1, 2005	June 30, 2005	TBD by Task Order
THIRD	July 1, 2005	January 31, 2006	TBD by Task Order
FOURTH	February 1, 2006	June 30, 2006	TBD by Task Order
OPTION PERIOD ONE			
FIFTH	July 1, 2009	January 31, 2007	TBD by Task Order
SIXTH	February 1, 2007	June 30, 2007	TBD by Task Order
OPTION PERIOD TWO			
SEVENTH	July 1, 2007	January 31, 2008	TBD by Task Order
EIGHTH	February 1, 2008	June 30, 2008	TBD by Task Order
NINTH	July 1, 2008	January 31, 2009	TBD by Task Order
TENTH	February 1, 2009	June 30, 2009	TBD by Task Order

Award fee that is not earned in an evaluation period cannot be reallocated to future evaluation periods.

(f)(1)Provisional award fee payments will be made under this contract pending the determination of the amount of fee earned for an evaluation period. If applicable, provisional award fee payments will be made to the Contractor on a monthly basis. The total amount of award fee available in an evaluation period that will be provisionally paid is the lesser of 80 percent or the prior period's evaluation score.

(2) Provisional award fee payments will be superseded by the final award fee evaluation for that period. If provisional payments exceed the final evaluation score, the Contractor will either credit the next payment voucher for the amount of such overpayment or refund the difference to the Government, as directed by the Contracting Officer.

(3) If the Contracting Officer determines that the Contractor will not achieve a level of performance commensurate with the provisional rate, payment of provisional award fee will be discontinued or reduced in such amounts, as the Contracting Officer deems appropriate. The Contracting Officer will notify the Contractor in writing if it is determined that such discontinuance or reduction is appropriate. This determination is not subject to the Disputes clause.

(4) Provisional award fee payments will be made prior to the first award fee determination by the Government.

(g) Award fee determinations are unilateral decisions made solely at the discretion of the Government.

(End of clause)

G.3 SUBMISSION OF VOUCHERS FOR PAYMENT (NASA 1852.216-87) (MAR 1998) (MODIFIED AUG 2002)

(a) The designated billing office for cost vouchers for purposes of the Prompt Payment clause of this contract is indicated below. Public vouchers for payment of costs shall include a reference to the contract number and the contractor's Taxpayer Identification Number (TIN#).

(b) Reporting Requirements Under Taxpayer Relief Act of 1997:

(1) The Taxpayer Relief Act of 1997, enacted August 5, 1997, requires Federal executive agencies to file information returns (i.e., Form 1099-MISC) for payment of $600 or more to corporations for services. Payments for services under certain confidential or classified contracts that meet the requirements of Internal Revenue Code Section 6050M(e) are excluded from the reporting requirements. This change became effective as of January 1, 1997.

(2) In order to comply with the Act, the contractor shall separately subtotal taxable services and nontaxable materials and supplies on each voucher. If subtotals are not specified on the vouchers, the Government will presume that the entire voucher amount is reportable and will be shown on the Form 1099-MISC generated by NASA and provided to the contractor and the Internal Revenue Service.

(c) DCAA Program for Contractor Direct Submission of Interim Vouchers to NASA Paying Offices:

(1) If the contractor is authorized to submit interim cost vouchers directly to the NASA paying office, the original voucher should be submitted to:

Accounting Operations Branch
NASA Ames Research Center
M/S 203-18
Moffett Field, CA 94035-1000

(2) For any period that the Defense Contract Audit Agency has authorized the Contractor to submit interim cost vouchers directly to the Government paying office, interim vouchers are not required to be sent to the Auditor, and are considered to be provisionally approved for payment, subject to final audit.

(3) Copies of vouchers should be submitted as directed by the Contracting Officer.

(d)If the contractor is not authorized to submit interim cost vouchers directly to the paying office as described in paragraph (c), the contractor shall prepare and submit vouchers as follows:

(1) One original Standard Form (SF) 1034, SF 1035, or equivalent Contractor's attachment, and three (3) copies to:

Accounting Operations Branch
NASA Ames Research Center
M/S 203-18
Moffett Field, CA 94035-1000

(2) Six (6) copies of SF 1034A, SF 1035A, or equivalent Contractor's attachment to the following offices by insertion in the memorandum block the names and addresses as follows and distribute to the respective addressees:

(ii) Copy 1 -- NASA Contracting Officer, STAMPED "INFO COPY"

NASA Ames Research Center:
M/S: 227-4
Moffett Field, CA 94035-1000

(iii) Copy 2 -- Auditor

Defense Contract Audit Agency
Peninsula Branch Office

480 San Antonio Road, Suite 150
Mountain View, CA 94040-1218

(iv) Copy 3 -- Contractor

(v) Copy 4 -- Contract Administration Office (if applicable), STAMPED "INFO COPY"

(vi) Copy 5 -- Project Management Office, STAMPED "INFO COPY"

(vii) Copy 6 -- NASA Equipment Management Branch, M/S 255-2, STAMPED "INFO COPY"

(For Contractor-Acquired Property and/or Centrally Reportable Equipment, if applicable – see paragraph (4) below)

(4) As authorized by FAR 52.216-7(a), the Contractor shall also include the following in its vouchers submitted for payment of costs incurred for any Contractor-Acquired Property or Centrally Reportable Equipment that has an acquisition cost exceeding $1,000.00;

(i) Date of Purchase

(ii) Purchase Order Number

(iii) Item Description

(iv) Quantity

(v) Purchase Price

"Centrally Reportable Equipment" is defined at NFS clause 1852.245-70.

(e) Public vouchers for payment of fee shall be prepared similarly to the procedures in paragraphs (c) or (d) of this clause, whichever is applicable, and be forwarded to:

Accounting Operations Branch
NASA Ames Research Center
M/S 203-18
Moffett Field, CA 94035-1000

This is the designated billing office for fee vouchers for purposes of the Prompt Payment clause of this contract.

(f) In the event that amounts are withheld from payment in accordance with provisions of this contract, a separate voucher for the amount withheld will be required before payment for that amount may be made.

(End of Clause)

G.4 DESIGNATION OF NEW TECHNOLOGY REPRESENTATIVE AND PATENT REPRESENTATIVE (NASA 1852.227-72) (JUL 1997)

(a) For purposes of administration of the clause of this contract entitled "New Technology" or "Patent Rights -- Retention by the Contractor (Short Form)", whichever is included, the following named representatives are hereby designated by the Contracting Officer to administer such clause:

Title	Office Code	Address (including zip code)
New Technology Representative	Code DK, M/S 202A-3	Moffett Field, CA 94035-1000

Patent Representative	Code DL, M/S 202A-4	Moffett Field, CA 94035-1000

(b) Reports of reportable items, and disclosure of subject inventions, interim reports, final reports, utilization reports, and other reports required by the clause, as well as any correspondence with respect to such matters, should be directed to the New Technology Representative unless transmitted in response to correspondence or request from the Patent Representative. Inquires or requests regarding disposition of rights, election of rights, or related matters should be directed to the Patent Representative. This clause shall be included in any subcontract hereunder requiring a "New Technology" clause or "Patent Rights--Retention by the Contractor (Short Form)" clause, unless otherwise authorized or directed by the Contracting Officer. The respective responsibilities and authorities of the above-named representatives are set forth in 1827.305-370 of the NASA FAR Supplement.

(End of clause)

G.5 TECHNICAL DIRECTION (NFS 1852.242-70) (SEP 1993)

(a) Performance of the work under this contract is subject to the written technical direction of the Contracting Officer Technical Representative (COTR), who shall be specifically appointed by the Contracting Officer in writing in accordance with NASA FAR Supplement 18-42.270. "Technical direction" means a directive to the Contractor that approves approaches, solutions, designs, or refinements; fills in details or otherwise completes the general description of work or documentation items; shifts emphasis among work areas or tasks; or furnishes similar instruction to the Contractor. Technical direction includes requiring studies and pursuit of certain lines of inquiry regarding matters within the general tasks and requirements in Section C of this contract.

(b) The COTR does not have the authority to, and shall not, issue any instruction purporting to be technical direction that--

(1) Constitutes an assignment of additional work outside the statement of work;

(2) Constitutes a change as defined in the changes clause;

(3) Constitutes a basis for any increase or decrease in the total estimated contract cost, the fixed fee (if any), or the time required for contract performance;

(4) Changes any of the expressed terms, conditions, or specifications of the contract; or

(5) Interferes with the Contractor's rights to perform the terms and conditions of the contract.

(c) All technical direction shall be issued in writing by the COTR.

(d) The Contractor shall proceed promptly with the performance of technical direction duly issued by the COTR in the manner prescribed by this clause and within the COTR's authority.

If, in the Contractor's opinion, any instruction or direction by the COTR falls within any of the categories defined in paragraph (b) above, the Contractor shall not proceed but shall notify the Contracting Officer in writing within 5 working days after receiving it and shall request the Contracting Officer to take action as described in this clause. Upon receiving this notification, the Contracting Officer shall either issue an appropriate contract modification within a reasonable time or advise the Contractor in writing within 30 days that the instruction or direction is--

(1) Rescinded in its entirety; or

(2) Within the requirements of the contract and does not constitute a change under the changes clause of the contract, and that the Contractor should proceed promptly with its performance.

(e) A failure of the Contractor and Contracting Officer to agree that the instruction or direction is both within the requirements of the contract and does not constitute a change under the changes clause, or a failure to agree upon the contract action to be taken with respect to the instruction or direction, shall be subject to the Disputes clause of this contract.

(f) Any action(s) taken by the Contractor in response to any direction given by any person other than the Contracting Officer or the COTR shall be at the Contractor's risk.

(End of Clause)

[END OF SECTION]

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 LISTING OF CLAUSES INCORPORATED BY REFERENCE

NOTICE: The following contract clauses pertinent to this section are hereby incorporated by reference:

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

CLAUSE NUMBER	DATE	TITLE
52.223-5	AUG 2003	POLLUTION PREVENTION AND RIGHT- TO-KNOW INFORMATION
52.204-7	OCT 2003	CENTRAL CONTRACTOR REGISTRATION

II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

CLAUSE NUMBER	DATE	TITLE
1852.208-81	OCT 2001	RESTRICTIONS ON PRINTING AND DUPLICATING
1852.223-70	APR 2002	SAFETY AND HEALTH
1852.223-74	MAR 1996	DRUG- AND ALCOHOL-FREE WORKPLACE
1852.223-75	FEB 2002	MAJOR BREACH OF SAFETY OR SECURITY
1852.242-72	AUG 1992	OBSERVANCE OF LEGAL HOLIDAYS (ALTERNATE I) (SEP 89) (ALTERNATE II) (OCT 2000)
1852.242-78	APR 2001	EMERGENCY MEDICAL SERVICES AND EVACUATION
1852.225-70	FEB 2000	EXPORT LICENSES

(End of Clause)

H.2 SECURITY REGISTRATION AND IDENTIFICATION BADGES--ON-SITE CONTRACTORS, EXCLUDING CONSTRUCTION (ARC 52.204-91) (FEB 1997)

(a) All persons engaged in work at Ames Research Center are required to be registered and badged by Protective Services, and to follow all security regulations and requirements.

(b) The Contractor is responsible for assuring that each employee or company representative wears his/her issued identification badge at all times while they are within the boundaries of Moffett Field. Badges shall be worn above the waist in such a manner as to be clearly visible.

(c)(1) The Contractor shall ensure that all employees who are terminated or who are no longer connected with the work being performed under this contract are processed out through Protective Services. Badges, keys, and other Government property must be accounted for and returned. If a computer account has been established, the account must be deactivated.

(2) The Government shall notify the Contractor if any terminated employee has not been processed out through Protective Services. The Contractor then has 30 days in which to process the terminated employee

without penalty. After 30 days, a Bill of Collection will be issued by the Government in the amount of $500 for each terminated employee that has not been properly processed out.

(d) U.S. Citizens and Permanent Resident Aliens. On the first day of work, the employee will check in at the NASA Visitor Badging Office, Building 26. A temporary badge will be issued and the employee will be directed to the work site. As soon as practical, the employee must bring the completed "Non-Government Employee Security Badging Packet," NASA Form 531 and AOM Form 500, to the Employee Badging Office, Building 15. Employees will need to submit a completed packet for each badge issued, including renewals. Fingerprints will be taken if necessary and a permanent badge will be issued. All terminating employees must check out through the Employee Badging Office.

(e) Foreign Nationals (Passports, Visas, Non-Immigrant Aliens). A National Agency Check (NAC) is a prerequisite for a foreign national, making it necessary that all paperwork be submitted to JP:15-1:4-4651/Foreign National Processing at least 60 days in advance of the anticipated entry date (NAC processing can take as long as 180 days to process). JP/Foreign National Processing will provide guidance as to what paperwork and type of visa are required.

(f) Reserve Gate Procedure. In the event of a labor dispute the Government may restrict entrance and exit of the Contractor's employees and the Contractor's suppliers to a specified gate at Ames Research Center, pursuant to Chapter 4 of NASA Handbook 5200.1A, "Industrial Labor Relations Manual." The Contractor agrees to have all employees rebadged and to direct them and their suppliers to utilize only the designated gate.

(End of Clause)

H.3 KEY PERSONNEL AND FACILITIES (NASA 1852.235-71) (MAR 1989)

(a) The personnel and/or facilities listed below (or specified in the contract Schedule) are considered essential to the work being performed under this contract. Before removing, replacing, or diverting any of the listed or specified personnel or facilities, the Contractor shall (1) notify the Contracting Officer reasonably in advance and (2) submit justification (including proposed substitutions) in sufficient detail to permit evaluation of the impact on this contract.

(b) The Contractor shall make no diversion without the Contracting Officer's written consent; provided, that the Contracting Officer may ratify in writing the proposed change, and that ratification shall constitute the Contracting Officer's consent required by this clause.

(c) The list of personnel and/or facilities (shown below or as specified in the contract Schedule) may, with the consent of the contracting parties, be amended from time to time during the course of the contract to add or delete personnel and/or facilities.

KEY POSITION	KEY PERSON
General Manager	**********
Wind Tunnel Operations Branch Manager	**********
Wind Tunnel Systems Support Branch	********** B-6, B-4
Thermophysics Facilities Support Branch	* **********
Safety and Quality Assurance Office Manager	**********

(End Of Clause)

H.4 CONTRACT TASK ORDERS

The Contracting Officer will issue Contract Task Orders (CTOs) to the Contractor to obtain services.

(a) Types of Contract Task Orders

(1) Contract Task Orders will be issued for services to support tests or projects and General Services (Section 3.3 of the SOW). A schedule of facility tests and projects will be provided. Modification may be issued for additional tests, projects, or unexpected repairs.
(2) Contract Task Orders will be issued for Other Direct Costs (ODCs); (for example, material, equipment, and other non-major subcontracted services).

(b) Contract Task Order Process

For this contract, performance-based Contract Task Orders (CTOs) will be issued by the Contracting Officer. The CTO and its corresponding Statement of Requirements (SOR) will describe the requirements and schedule.

A draft CTO will be prepared by the Government for Contractor review and comment. The Government and the Contractor will discuss the appropriate target cost commensurate with the complexity and risk associated with the task. A formal CTO will then be written, and the Government and the Contractor will negotiate a realistic cost baseline and establish the target cost, incentive fee, and applicable award fee for type (1) tasks. A formal CTO will then be written, and the Government and the Contractor will negotiate a realistic cost baseline and establish the target cost and applicable award fee for type (2) tasks.

The following describes the implementation of the performance-based CTO system.

(1) The Government will develop and generate a draft SOR. The Government will provide the draft to the Contractor for review and comment. As part of this review, the Contractor may or may not propose target cost. This step will be iterated as needed to ensure that a complete and understandable set of requirements result.
(2) The Government will provide the Contractor with an unsigned CTO and SOR describing the requirements of services to be performed by the Contractor and may or may not include target cost.
(3) The Contractor shall respond within five (5) working days with a proposal containing a cover letter citing the Contractor's understanding of the intended task, the Contractor's initial estimates of the resources required, and a commensurate target cost breakdown.
(4) If the Government agrees with the proposal, a signed copy of the CTO will be returned to the Contractor authorizing work to begin. No work on the task shall be performed by the Contractor until authorization is received from the Contracting Officer (CO).
(5) The Government may negotiate changes to the CTO and the Contractor's proposal with the Contractor at this time that affect baseline estimates. The resultant definitization of this negotiation will result in a modification to the CTO. Any subsequent task changes that significantly affect resources will be handled in the same manner.
(6) The Contractor shall provide expense accountability against the baseline CTO estimates on a task basis via NF 533M report. The Contractor will provide an assessment of its own performance against performance metrics for those services.
(7) Tasks may be terminated at any time by written notice from the CO.

[End of Clause]

H.5 (LIMITED) RELEASE OF CONTRACTOR CONFIDENTIAL BUSINESS INFORMATION (CBI) (ARC 52.203-91) (JUN 2001)

(a) NASA may find it necessary to release information submitted by the Contractor, either in response to this solicitation or pursuant to the provisions of this contract, to individuals not employed by NASA. Business information that would ordinarily be entitled to confidential treatment may be included in the information released to these individuals. Accordingly, by submission of this proposal, or signature on this contract or

other contracts, the Contractor hereby consents to a limited release of its Confidential Business Information (CBI).

(b) Possible circumstances where the Agency may release the Contractor's CBI include, but are not limited to, the following:

(1) To other Agency contractors and subcontractors, and their employees tasked with assisting the Agency in handling and processing information and documents in the evaluation, the award or the administration of Agency contracts, such as providing both preaward and post award audit support and specialized technical support to NASA's technical evaluation panels;

(2) To NASA contractors and subcontractors, and their employees engaged in information systems analysis, development, operation, and maintenance, including performing data processing and management functions for the Agency.

(c) NASA recognizes its obligation to protect the contractor from competitive harm that could result from the release of such information to a competitor. Except where otherwise provided by law, NASA will permit the limited release of CBI under subparagraphs (1) or (2) only pursuant to non-disclosure agreements signed by the assisting contractor or subcontractor, and their individual employees who may require access to the CBI to perform the assisting contract.

(d) NASA's responsibilities under the Freedom of Information Act are not affected by this clause.

(e) The Contractor agrees to include this clause, including this paragraph (e), in all subcontracts at all levels awarded pursuant to this contract that require the furnishing of confidential business information by the subcontractor.

(End of Clause)

H.6 ORGANIZATIONAL CONFLICTS OF INTEREST (ARC 1852.209-71) (MAR 1998) (MODIFIED NOV 2003)

(a) The Contracting Officer has concluded that this acquisition may give rise to a potential organizational conflict of interest. Accordingly, the attention of the Contractor is directed to FAR Subpart 9.5, "Organizational and Consultant Conflicts of Interest."

(b) The nature of the potential organizational conflict of interest in this acquisition is described below:

The NASA-ARC Aerospace facilities were constructed as a national aeronautical research resource to be utilized by private industry, universities, DoD, NASA and other Government agencies. Consequently, private aircraft/airframe manufacturers conduct tests in these facilities. The contractor operating and maintaining these facilities will be responsible for all or major aspects of test operation from inception through post-test documentation of aircraft models that are tested in these facilities and, as a result, will have access to proprietary data developed by other firms. Access by the operations/maintenance Contractor to Government-sensitive or third party proprietary data creates a potential organizational conflict of interest.

(c) To avoid, neutralize, or mitigate the potential organizational conflict of interest, the Contractor shall not, during the performance of the contract and for a period of three years following completion of performance thereof, engage in the following activities:

significant commercial design, development, or production of aircraft, airframes, aircraft engines or advanced aerospace vehicles

The Contracting Officer may specifically approve an exception to this prohibition.

(d) (1) If, in the performance of work under this contract, the Contractor and its employees has access to Government-sensitive or third party proprietary data, the Contractor and its employees shall protect such data from unauthorized use or disclosure so long as it remains proprietary. In addition, the Contractor and its employees shall not be permitted to use such data for any purpose other than the performance of work under this Contract without the explicit written permission of the owner of such data. The Contractor and its employees shall treat such data in accordance with any restrictions imposed on such data as set forth in this contract.

(2) If, in the performance of work under this contract, the Contractor enters into a separate agreement with a third party for the protection of sensitive/proprietary data, the Contractor shall furnish a copy of that agreement to the Contracting Officer.

(3) The Contractor must educate its employees, through formal training, not to divulge the Government-sensitive or third party proprietary data received in connection with the performance of work under this contract. The Contractor shall provide a plan to implement this training for the approval of the Contracting Officer.

(4) The Contractor shall obtain from all employees having access to Government-sensitive or third party proprietary data under this contract a written agreement which shall prohibit those employees, during the term of their employment and thereafter, from disclosing such data to others or using it for their own behalf.

(e) The term "Contractor" as used in this clause shall include (i) the corporate or other entity executing this contract with the Government; (ii) such entity's parent, subsidiary, affiliate, or successor entities to the extent that the parent, subsidiary, affiliate, or successor entity has responsibility for the performance of work under this contract; and (iii) the Contractor's subcontractors that (A) operate the Aerospace facilities as delineated in the Statement of Work of this contract or (B) handle, receive, reduce, interpret, or transmit data obtained, used, or produced in conjunction with research programs in these Aerospace facilities.

(f) The term "contract" as used in this clause shall include options, extensions, and any successor contracts performed or to be performed by the Contractor without any other contractor intervening.

(g) The Contractor shall include paragraphs (a) through (f) of this clause in every subcontract. The Contractor shall be responsible for ensuring compliance with all of the provisions of this clause by each of its subcontractors.

[End of Clause]

H.7 EMERGENCY PREPAREDNESS AND RESPONSE (ARC 52.223-90) (MAR 1999)

In the event of an emergency that requires a Level 1, 2, or 3 response, as defined in Paragraph 106, "Levels of Response," in the Ames Handbook and Emergency Preparedness Plan (AHB 1600.4), the contractor shall follow the emergency procedures (e.g., shut down equipment, conduct damage assessments, etc.) shown in Paragraph 202, "Responsibilities," of the Handbook. Responsibilities are assigned on an organizational basis; therefore, Contractors must refer to the section(s) of the Handbook that correlate with their respective COTR organization(s).

(End of Clause)

H.8 DISASTER ASSISTANCE AND RESCUE TEAM (DART) PARTICIPATION (ARC 52.223-91) (MAR 1999)

Contractor employees are eligible to participate in the Disaster Assistance and Rescue Team (DART) if approved in writing by the Contractor and appointed by the Government. If a Contractor approves of an employee's participation, the contractor agrees to modify the employee's position description to include

participation in DART, and to provide additional indemnification (e.g., worker's compensation insurance, general liability, etc.) as may be necessary to protect its employee and/or the Government while the employee is participating in the program.

DART Definition

This 90-person team is comprised of civil service, contractor, and military personnel that work at Ames Research Center and Moffett Federal Airfield. The team composition includes scientists, engineers, wind tunnel mechanics, aircraft mechanics, facility maintenance personnel, computer specialist, industrial hygienist, safety professionals, heavy equipment operators, administrative personnel, managers, procurement officials, and data specialists. DART is an umbrella organization that has six functional groups. The groups are Rescue, Hazardous Materials Response, Damage and Utility Control, Structural Assessment, Emergency Communications, and Emergency Operations Center Administrative Support. The Emergency Services Office is responsible for the Moffett Field Emergency Operations Center as well as the Emergency Communications Facility. Typically, participation will involve approximately 5% of the employee's (full) time, except for initial training/orientation, which will involve approximately 10% of the employee's (full) time. The executive management at Ames Research Center strongly encourages contractor participation on DART, which needs all of our support, as it has proven to be a valuable element of the Center's Emergency Service Program.

(End of Clause)

H.9 MANAGEMENT AND PROTECTION OF DATA (ARC 52.227-93) (JUL 1988)

(a) In the performance of this contract it is anticipated that the Contractor may have access to, be furnished, use, or generate the following types of data (recorded information):

(1) data submitted to the Government with limited rights or restricted rights notices;

(2) data of third parties which the Government has agreed to handle under protective arrangements; and

(3) data generated by or on behalf of the Government which the Government intends to control the use and dissemination thereof.

(b) In order to provide management appropriate for protecting the interests of the Government and other owners of such data, the Contractor agrees with respect to data in category (a)(1) above, and with respect to any data in categories (a)(2) and (a)(3) when so identified by the Contracting Officer, to:

(1) use and disclose such data only to the extent necessary to perform the work required under this contract, with particular emphasis on restricting disclosure of the data to those persons who have a definite need for the data in order to perform under this contract;

(2) not reproduce the data unless reproduction of the data is specifically permitted elsewhere in the contract or by the Contracting Officer;

(3) refrain from disclosing the data to third parties without the written consent of the Contracting Officer; and

(4) return or deliver the data including all copies thereof to the Contracting Officer or his designated recipient when requested by the Contracting Officer.

(End of Clause)

H.10 HANDLING OF DATA (ARC 52.227-96) (JUN 1989)

(a) Paragraph (d)(1) of the "Rights in Data--General" clause of this contract permits the Government to restrict the Contractor's right to use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the Contractor in the performance of the contract provided such restriction is expressly set forth in the contract. Pursuant to this authority, the following restrictions shall apply to such data and shall be included, in substance, in all subcontracts:

(b) Data specifically used.

(1) In the performance of this contract, it is anticipated the Contractor may have access, or be furnished, data (including financial, administrative, cost or pricing, or management information as well as technical data or computer software) of third parties which the Government has agreed to handle under protective arrangements, as well as such Government data for which the Government intends to control the use and dissemination.

(2) In order to protect the interests of the Government and the owners of such data, the Contractor agrees, with respect to such third party or Government data that is either marked with a restrictive legend or specifically identified in this contract or in writing by the Contracting Officer as being subject to this clause, to use and disclose such data only to the extent necessary to perform the work required under this contract, preclude disclosure of such data outside the Contractor's organization, and return or dispose of such data as directed by the Contracting Officer when the data is no longer needed for contract performance.

(3) Notwithstanding (2) above, the Contractor shall not be restricted in the use and disclosure of any data that becomes generally available without breach of this clause by this Contractor, is known to or is developed by the Contractor independently of any disclosure of proprietary, restricted, or confidential data hereunder, or is rightfully received by the Contractor from a third party without restriction.

(c) Data first produced.

Data first produced by the Contractor under this contract may include data for which the Government wants to control the use and dissemination. The Contracting Officer may require, or this contract may presently specify, that the Contractor apply restrictive legends to such identified data prior to delivery to the Government, or to third parties at the Government's direction, that restrict the use and disclosure of the data by any third party recipient. However, such restrictive legends shall in no way affect the Contractor's or the Government's rights to such data as provided in the "Rights in Data--General" clause of this contract.

(End of Clause)

H.11 SEVERANCE PAY (ARC 52.231-90) (MAY 1993)

In conjunction with FAR 31.205-6(g), the severance pay cost shall not exceed 40 hours pay for each year of employment per employee up to a maximum of 160 hours per eligible employee. Severance cost eligibility computation for reimbursement shall also be limited to only the period of employment on the service contract at Ames Research Center. In no event shall the Government reimburse the Contractor for severance cost for employees who voluntarily accept employment in place with the succeeding contractor within ninety (90) days after completion of the current contract.

(End of Clause)

H.12 CONTRACTOR MONTHLY ACCIDENT REPORTING (ARC 52.223-92) (MAR 2001)

In accordance with the Safety and Health Clause - NFS 18.52.223-70, and the Ames Health and Safety Manual – AHB 1700.1, the Contractor shall report accident and lost time injuries. Ames Research Center (ARC) collects this data in the Contractor Monthly Accident Reporting (CMAR) web-based system, through the submission of a monthly ARC 15 CMAR form which is located at http://cmar.arc.nasa.gov/. The CMAR system

will assist the user via built in hyperlinks, to log into the system, complete the ARC 15 Form and other administrative activities.

The contractor shall ensure that accurate and complete data entry of the ARC 15 information is input monthly to the CMAR web-based system for its firm as well as all applicable subcontractors no later than the 10th day of the subsequent month. The contractor shall be responsible for input into the CMAR system of all changes (additions and/or deletions) for its applicable subcontractors.

(End of Clause)

[END OF SECTION]

PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I.1 CLAUSES INCORPORATED BY REFERENCE (FAR 52.252-2) (FEB 1998)

NOTICE: The following contract clauses pertinent to this section are hereby incorporated by reference:

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

CLAUSE NUMBER	DATE	TITLE
52.202-1	DEC 2001	DEFINITIONS
52.203-3	APR 1984	GRATUITIES
52.203-5	APR 1984	COVENANT AGAINST CONTINGENT FEES
52.203-6	JUL 1995	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT
52.203-7	JUL 1995	ANTI-KICKBACK PROCEDURES
52.203-8	JAN 1997	CANCELLATION, RESCISSION AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY
52.203-10	JAN 1997	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY
52.203-12	JUN 2003	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS
52.204-2	AUG 1996	SECURITY REQUIREMENTS
52.204-4	AUG 2000	PRINTED OR COPIED DOUBLE-SIDED ON RECYCLED PAPER
52.209-6	JUL 1995	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT
52.211-5	AUG 2000	MATERIAL REQUIREMENTS
52.211-15	SEP 1990	DEFENSE PRIORITY AND ALLOCATION REQUIREMENTS
52.215-2	JUN 1999	AUDIT AND RECORDS--NEGOTIATION
52.215-8	OCT 1997	ORDER OF PRECEDENCE - UNIFORM CONTRACT FORMAT
52.215-10	OCT 1997	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA
52.215-12	OCT 1997	SUBCONTRACTOR COST OR PRICING DATA
52.215-14	OCT 1997	INTEGRITY OF UNIT PRICES
52.215-15	DEC 1998	PENSION ADJUSTMENTS AND ASSET REVERSIONS
52.215-17	OCT 1997	WAIVER OF FACILITIES CAPITAL COST OF MONEY
52.215-18	OCT 1997	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS (PRB) OTHER THAN PENSIONS
52.216-7	DEC 2002	ALLOWABLE COST AND PAYMENT (Insert “30th” in Paragraph (a)(3))
52.217-8	NOV 1999	OPTION TO EXTEND SERVICES
52.217-9	MAR 2000	OPTION TO EXTEND THE TERM OF THE CONTRACT (Insert ”30 days”, in paragraph (a). Insert ”five (5) years” in paragraph (c))
52.219-4	JAN 1999	NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS

52.219-8	OCT 2000	UTILIZATION OF SMALL BUSINESS CONCERNS
52.219-9	JAN 2002	SMALL BUSINESS SUBCONTRACTING PLAN (ALTERNATE II) (OCT 2001)
52.219-16	JAN 1999	LIQUIDATED DAMAGES SUBCONTRACTING PLAN
52.219-23	JUN 2003	NOTICE OF PRICE EVALUATION ADJUSTMENT FOR SMALL DISADVANTAGED BUSINESS CONCERNS (insert “10” in paragraph (b)(1))
52.222-1	FEB 1997	NOTICE TO THE GOVERNMENT OF LABOR DISPUTES
52.222-2	JUL 1990	PAYMENT FOR OVERTIME PREMIUMS (Insert "$___TBN___" in paragraph (a))
52.222-3	JUN 2003	CONVICT LABOR
52.222-4	SEP 2000	CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION
52.222-20	DEC 1996	WALSH-HEALEY PUBLIC CONTRACTS ACT
52.222-21	FEB 1999	PROHIBITION OF SEGREGATED FACILITIES
52.222-26	APR 2002	EQUAL OPPORTUNITY
52.222-35	DEC 2001	EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS
52.222-36	JUN 1998	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES
52.222-37	DEC 2001	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS
52.222-41	MAY 1989	SERVICE CONTRACT ACT OF 1965, AS AMENDED
52.223-3	JAN 1997	HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (ALTERNATE I) (JUL 1995) Insert "___NONE___" in paragraph (b).
52.223-5	AUG 2003	POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION
52.223-6	MAY 2001	DRUG-FREE WORKPLACE
52.223-10	AUG 2000	WASTE REDUCTION PROGRAM
52.223-12	MAY 1995	REFRIGERATION EQUIPMENT AND AIR CONDITIONERS
52.223-14	AUG 2003	TOXIC CHEMICAL RELEASE REPORTING
52.225-1	JUN 2003	BUY AMERICAN ACT--SUPPLIES
52.225-13	OCT 2003	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES
52.227-1	JUL 1995	AUTHORIZATION AND CONSENT
52.227-2	AUG 1996	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT
52.227-3	APR 1984	PATENT INDEMNITY
52.227-11	JUN 1997	PATENT RIGHTS – RETENTION BY THE CONTRACTOR (SHORT FORM), as modified by NFS 1852.227-11 PATENT RIGHTS – RETENTION BY THE CONTRACTOR (SHORT FORM)
52.227-14	JUN 1987	RIGHTS IN DATA--GENERAL ALTERNATE II (JUN 1987) ALTERNATE III (JUN 1987) AS MODIFIED BY 1852.227-14 NASA FAR SUPPLEMENT (OCT 1995)
52.228-7	MAR 1996	INSURANCE--LIABILITY TO THIRD PERSONS
52.229-3	APR 2003	FEDERAL, STATE, AND LOCAL TAXES
52.230-2	APR 1998	COST ACCOUNTING STANDARDS
52.230-6	NOV 1999	ADMINISTRATION OF COST ACCOUNTING

		STANDARDS
52.232-17	JUN 1996	INTEREST
52.232-18	APR 1984	AVAILABILITY OF FUNDS
52.232-20	APR 1984	LIMITATION OF COST
52.232-22	APR 1984	LIMITATION OF FUNDS
52.232-23	JAN 1986	ASSIGNMENT OF CLAIMS
52.232-25	OCT 2003	PROMPT PAYMENT ALTERNATE 1 (FEB 2002)
52.232-33	OCT 2003	PAYMENT BY ELECTRONIC FUNDS TRANSFER-CENTRAL CONTRACTOR REGISTRATION
52.233-1	JUL 2002	DISPUTES
52.233-3	AUG 1996	PROTEST AFTER AWARD (ALTERNATE I) (JUN 1985)
52.237-2	APR 1984	PROTECTION OF GOVERNMENT BUILDINGS, EQUIPMENT, AND VEGETATION
52.237-3	JAN 1991	CONTINUITY OF SERVICES
52.239-1	AUG 1996	PRIVACY OR SECURITY SAFEGUARDS
52.242-1	APR 1984	NOTICE OF INTENT TO DISALLOW COSTS
52.242-3	MAY 2001	PENALTIES FOR UNALLOWABLE COSTS
52.242-4	JAN 1997	CERTIFICATION OF FINAL INDIRECT COSTS
52.242-13	JUL 1995	BANKRUPTCY
52.243-2	AUG 1987	CHANGES--COST-REIMBURSEMENT (ALTERNATE II) (APR 1984)
52.244-2	AUG 1998	SUBCONTRACTS (ALTERNATE I) (AUG 1998)
52.244-5	DEC 1996	COMPETITION IN SUBCONTRACTING
52.244-6	APR 2003	SUBCONTRACTS FOR COMMERCIAL ITEMS
52.245-1	APR 1984	PROPERTY RECORDS
52.245-5	JUN 2003	GOVERNMENT PROPERTY (COST-REIM-BURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS)
52.246-25	FEB 1997	LIMITATION OF LIABILITY – SERVICES
52.248-1	FEB 2000	VALUE ENGINEERING
52.249-6	SEP 1996	TERMINATION (COST-REIMBURSEMENT)
52.249-14	APR 1984	EXCUSABLE DELAYS
52.251-1	APR 1984	GOVERNMENT SUPPLY SOURCES
52.253-1	JAN 1991	COMPUTER GENERATED FORMS

II. NASA FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

CLAUSE NUMBER	DATE	TITLE
1852.203-70	JUN 2001	DISPLAY OF INSPECTOR GENERAL HOTLINE POSTERS
1852.204-76	JUL 2002	SECURITY REQUIREMENTS FOR UNCLASSIFIED INFORMATION TECHNOLOGY RESOURCES (Insert "within 60 days" in paragraph (c))
1852.209-72	DEC 1988	COMPOSITION OF THE CONTRACTOR
1852.216-89	JUL 1997	ASSIGNMENT AND RELEASE FORMS
1852.219-74	SEP 1990	USE OF RURAL AREA SMALL BUSINESSES
1852.219-75	MAY 1999	SMALL BUSINESS SUBCONTRACTING REPORTING
1852.219-76	JUL 1997	NASA 8 PERCENT GOAL
1852.228-75	OCT 1988	MINIMUM INSURANCE COVERAGE
1852.235-70	FEB 2003	CENTER FOR AEROSPACE INFORMATION—FINAL SCIENTIFIC AND TECHNICAL REPORTS
1852.237-70	DEC 1988	EMERGENCY EVACUATION PROCEDURES
1852.243-71	MAR 1997	SHARED SAVINGS

(End of Clause)

I.2 SECURITY CLASSIFICATION REQUIREMENTS (NASA 1852.204-75) (SEP 1989)

Performance under this contract will involve access to and/or generation of classified information, work in a security area, or both, up to the level of SECRET. See Federal Acquisition Regulation clause 52.204-2 in this contract and DD Form 254, Contract Security Classification Specification, Attachment J.1 (a) 2.

(End of Clause)

I.3 NOTIFICATION OF OWNERSHIP CHANGES (FAR 52.215-19) (OCT 1997)

(a) The Contractor shall make the following notifications in writing: (1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days. (2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

(b) The Contractor shall- (1) Maintain current, accurate, and complete inventory records of assets and their costs; (2) Provide the ACO or designated representative ready access to the records upon request; (3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and (4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

(c) The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

(End of clause)

I.4 FAR 52.216-10 INCENTIVE FEE (MAR 1997)

(a) General. The Government shall pay the Contractor for performing this contract a fee determined as provided in this contract.

(b) Target cost and target fee. The target cost and target fee specified in the Schedule are subject to adjustment if the contract is modified in accordance with paragraph (d) of this clause.

(1) "Target cost," as used in this contract, means the estimated cost of this contract as initially negotiated, adjusted in accordance with paragraph (d) of this clause.

(2) "Target fee," as used in this contract, means the fee initially negotiated on the assumption that this contract would be performed for a cost equal to the estimated cost initially negotiated, adjusted in accordance with paragraph (d) of this clause.

(c) Withholding of payment. Normally, the Government shall pay the fee to the Contractor as specified in the Schedule. However, when the Contracting Officer considers that performance or cost indicates that the Contractor will not achieve target, the Government shall pay on the basis of an appropriate lesser fee. When the Contractor demonstrates that performance or cost clearly indicates that the Contractor will earn a fee significantly above the target fee, the Government may, at the sole discretion of the Contracting Officer, pay on the basis of an appropriate higher fee. After payment of 85 percent of the applicable fee, the Contracting Officer may withhold further payment of fee until a reserve is set aside in an amount that the Contracting Officer considers necessary to protect the Government's interest. This reserve shall not exceed 15 percent of the applicable fee or $100,000, whichever is less. The Contracting Officer shall release 75 percent of all fee withholds under this contract after receipt of the certified final indirect cost rate proposal covering the year of physical completion of this contract, provided the Contractor has satisfied all other contract terms and conditions, including the submission of the final patent and royalty reports, and is not delinquent in submitting final vouchers on prior years' settlements. The Contracting Officer may release up to 90 percent of the fee withholds under this contract based on the Contractor's past performance related to the submission and settlement of final indirect cost rate proposals.

(d) Equitable adjustments. When the work under this contract is increased or decreased by a modification to this contract or when any equitable adjustment in the target cost is authorized under any other clause, equitable adjustments in the target cost, target fee, minimum fee, and maximum fee, as appropriate, shall be stated in a supplemental agreement to this contract.

(e) Fee payable.

(1) The fee payable under this contract shall be the target fee increased by thirty (30) cents for every dollar that the total allowable cost is less than the target cost or decreased by fifty (50) cents for every dollar that the total allowable cost exceeds the target cost. In no event shall the fee be greater than ten (10) percent or less than zero percent of the target cost.

(2) The fee shall be subject to adjustment, to the extent provided in paragraph (d) of this clause, and within the minimum and maximum fee limitations in paragraph

(e)(1) of this clause, when the total allowable cost is increased or decreased as a consequence of-

(i) Payments made under assignments; or

(ii) Claims excepted from the release as required by paragraph (h)(2) of the Allowable Cost and Payment clause.

(3) If this contract is terminated in its entirety, the portion of the target fee payable shall not be subject to an increase or decrease as provided in this paragraph. The termination shall be accomplished in accordance with other applicable clauses of this contract.

(4) For the purpose of fee adjustment, "total allowable cost" shall not include allowable costs arising out of-

(i) Any of the causes covered by the Excusable Delays clause to the extent that they are beyond the control and without the fault or negligence of the Contractor or any subcontractor;

(ii) The taking effect, after negotiating the target cost, of a statute, court decision, written ruling, or regulation that results in the Contractor's being required to pay or bear the burden of any tax or duty or rate increase in a tax or duty;

(iii) Any direct cost attributed to the Contractor's involvement in litigation as required by the Contracting Officer pursuant to a clause of this contract, including furnishing evidence and information requested pursuant to the Notice and Assistance Regarding Patent and Copyright Infringement clause;

(iv) The purchase and maintenance of additional insurance not in the target cost and required by the Contracting Officer, or claims for reimbursement for liabilities to third persons pursuant to the Insurance Liability to Third Persons clause;

(v) Any claim, loss, or damage resulting from a risk for which the Contractor has been relieved of liability by the Government Property clause; or

(vi) Any claim, loss, or damage resulting from a risk defined in the contract as unusually hazardous or as a nuclear risk and against which the Government has expressly agreed to indemnify the Contractor.

(5) All other allowable costs are included in "total allowable cost" for fee adjustment in accordance with this paragraph (e), unless otherwise specifically provided in this contract.
(f) Contract modification. The total allowable cost and the adjusted fee determined as provided in this clause shall be evidenced by a modification to this contract signed by the Contractor and Contracting Officer.
(g) Inconsistencies. In the event of any language inconsistencies between this clause and provisioning documents or Government options under this contract, compensation for spare parts or other supplies and services ordered under such documents shall be determined in accordance with this clause.

(End of clause)

I.5 RESERVED

I.6 ESTIMATE OF PERCENTAGE OF RECOVERED MATERIAL CONTENT FOR EPA-DESIGNATED PRODUCTS (FAR 52.223-9)(AUG 2000)

(a) Definitions . As used in this clause-
“Postconsumer material” means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. Postconsumer material is a part of the broader category of “recovered material.”
“Recovered material” means waste materials and by-products recovered or diverted from solid waste, but the term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.
(b) The Contractor, on completion of this contract, shall- (1) Estimate the percentage of the total recovered material used in contract performance, including, if applicable, the percentage of postconsumer material content; and (2) Submit this estimate to NASA Ames Environmental Manager (Code QE) and provide a copy to the Contracting Officer.

(End of clause)

I.7 OMBUDSMAN (NFS 1852.215-84) (JUN 2000)

(a) An ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and contractors during the preaward and postaward phases of this acquisition. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman is not to diminish the authority of the contracting officer, the Source Evaluation Committee, or the selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of formal contract disputes. Therefore, before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the contracting officer for resolution.

(b) If resolution cannot be made by the contracting officer, interested parties may contact the installation ombudsman:

NASA Ames Research Center
Mr. Lewis S. Braxton
Director of Center Operations; M/S 200-9
Moffett Field, CA 94035-1000
Telephone: (650) 604-5068
FAX: (650) 604-0031 or (650) 604-1668
Email: Lewis.S.Braxton@nasa.gov

Concerns, issues, disagreements, and recommendations, which cannot be resolved at the installation, may be referred to the NASA ombudsman, the Director of the Contract Management Division, at 202-358-0445, facsimile 202-358-3083, e-mail James.A.Balinskas@nasa.gov. Please do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the contracting officer or as specified elsewhere in this document.

(End of clause)

I.8 SERVICE CONTRACT ACT (SCA) MINIMUM WAGES AND FRINGE BENEFITS (FAR 52.222-47) (MAY 1989)

An SCA wage determination applicable to this work has been requested from the U.S. Department of Labor. If an SCA wage determination is not incorporated herein, the bidders/offerors shall consider the economic terms of the collective bargaining agreement (CBA) between the incumbent Contractor (Sverdrup Technology, Inc. and Sierra Lobo, Inc.) and the International Brotherhood of Electrical Workers, Local 2131; the International Association of Machinists and Aerospace Workers, Lodge No. 1414; and the International Union of Operating Engineers, Local Union No. 3, AFL-CIO. If the economic terms of the collective bargaining agreement or the collective bargaining agreement itself is not attached to the solicitation, copies can be obtained from the Contracting Officer. Pursuant to Department of Labor Regulation, 29 CFR 4.1b and paragraph (g) of the clause at 52.222-41, Service Contract Act of 1965, as amended, the economic terms of that agreement will apply to the contract resulting from this solicitation, notwithstanding the absence of a wage determination reflecting such terms, unless it is determined that the agreement was not the result of arm's length negotiations or that after a hearing pursuant to section 4(c) of the Act, the economic terms of the agreement are substantially at variance with the wages prevailing in the area.

(End of clause)

I.9 STATEMENT OF EQUIVALENT RATES FOR FEDERAL HIRES (FAR 52.222-42) (MAY 1989) (MODIFIED ARC/FEB 1997)

(a) In compliance with the Service Contract Act of 1965, as amended, and the regulations of the Secretary of Labor (29 CFR Part 4), this clause identifies the classes of service employees expected to be employed under the contract and states the wages and fringe benefits payable to each if they were employed by the contracting agency subject to the provisions of 5 U.S.C. 5341 or 5332.

THIS STATEMENT IS FOR INFORMATION ONLY; IT IS NOT A WAGE DETERMINATION.

NASA/OPM Job Title	Grade	GS Step 1 or WG Step 2 Rate
Information Technology Specialist	GS-11	$26.56
Engineering Technician	GS-7	$16.85
Engineering Technician	GS-9	$20.61
Engineering Technician	GS-11	$24.93
Human Resources Assistant	GS-5	$13.60
Secretary (OA)	GS-7	$16.85
Supply Management Specialist	GS-7	$16.85
Electrician	WG-11	$10.66
Electrician Leader	WL-11	$11.72
Instrument Mechanic	WG-11	$10.66
Instrument Mechanic Leader	WL-11	$11.72
Wind Tunnel Mechanic	WG-11	$10.66
Wind Tunnel Mechanic Leader	WL-11	$11.72
General Engineer	GS-11	$24.93
General Engineer	GS-12	$29.88

Costs to the government for employee fringe benefits are estimated at an average of 26% of salary for all permanent employees as follows:

Fringe Benefit	Percent of Salary
Federal Employees Retirement System (FERS)*	
Thrift Savings Plan (TSP)	
Social Security (FICA)	
Medicare	
Employee Life Insurance (FEGLI)	
Employee Health Insurance (FEHB)	
Combined Fringe Benefits	

*Cost to the government for CSRS retirement employees is 7%. There are no TSP or FICA costs included in CSRS benefits. Total cost for CSRS employees is 14.1%.

The paid holidays provided by law to Federal employees are:

1. New Year's Day	6. Labor Day
2. Martin Luther King Day.	7. Columbus Day

3. President's Day	8. Veteran's Day
4. Memorial Day	9. Thanksgiving Day
5. Independence Day	10. Christmas Day

The amount of vacation or paid leave provided by law that would be given to Federal employees is as follows:

- Two hours of annual leave each week for an employee with less than three years of service.
- Three hours of annual leave each week for an employee with three, but less than fifteen years of service.
- Four hours of annual leave each week for an employee with fifteen or more years of service.

(End of Clause)

[END OF SECTION]

PART III – LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

SECTION J – LIST OF ATTACHMENTS

J.1 ARC 52.211-90 LIST OF DOCUMENTS, EXHIBITS, AND ATTACHMENTS (JAN 1998)

(a) The following documents, exhibits, and attachments are included in the solicitation and resulting contract. Representations and certifications completed by the contractor in responses to this solicitation are incorporated by reference in the resulting contract at time of award.

Attachment No./Title	Date
1a. Department of Labor Wage Determination No. 97-0099, Revision 4	2/14/04
1b. Department of Labor Wage Determination No. 94-2062, Revision 16	6/3/03
2. DOD Contract Security Classification Specification (DD254)	
3. Contract Data Requirements List	
4. Equipment List for Facilities (Representative Listing)	
5. Facility Descriptions	
6. Contractor's Environmental, Safety & Health Plan is incorporated by reference	
7. Contractor's proposal is incorporated by reference	
8. Contractor's Small Business Plan is incorporated by reference	

[END OF SECTION]

REGISTER OF WAGE DETERMINATIONS UNDER THE SERVICE CONTRACT ACT
By direction of the Secretary of Labor

US DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
WAGE AND HOUR DIVISION
WASHINGTON, D.C. 20210

William W. Gross
Director
Division of Wage Determinations

Wage Determination No.: 1997-0099
Revision No.: 4
Date Of Last Revision: 2/14/2003

This wage determination applies at the address(es) below:

Ames Research Center, Santa Clara County, CA

Employed on NASA contract for testing, facility operations and maintenance services.

Collective Bargaining Agreement between Sverdrup Technology Inc. and Sierra Lobo, Inc. and International Brotherhood of Electrical Workers Local No. 2131; International Association of Machinists & Aerospace Workers, Lodge 1414; and International Union of Operating Engineers, Local Union No. 3, AFL-CIO effective September 16, 2002 through September 15, 2005.

In accordance with Sections 2(a) and 4(c) of the Service Contract Act, as amended, employees employed by the contractor(s) in performing services covered by the Collective Bargaining Agreement(s) are to be paid wage rates and fringe benefits set forth in the current collective bargaining agreement and modified extension agreement(s).

94-2062 CA,SAN JOSE 06/10/03
FOR OFFICIAL USE ONLY BY FEDERAL AGENCIES PARTICIPATING IN MOU WITH DOL
| WASHINGTON D.C. 20210
|
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|
| Wage Determination No.: 1994-2062
William W.Gross Division of | Revision No.: 16
Director Wage Determinations| Date Of Last Revision: 06/03/2003
_____|_____

State: California

Area: California Counties of Santa Clara, Santa Cruz

Fringe Benefits Required Follow the Occupational Listing

OCCUPATION CODE - TITLE	MINIMUM WAGE RATE
01000 - Administrative Support and Clerical Occupations	
01011 - Accounting Clerk I	11.98
01012 - Accounting Clerk II	13.10
01013 - Accounting Clerk III	15.93
01014 - Accounting Clerk IV	18.53
01030 - Court Reporter	18.35
01050 - Dispatcher, Motor Vehicle	16.67
01060 - Document Preparation Clerk	14.52
01070 - Messenger (Courier)	12.34
01090 - Duplicating Machine Operator	14.52
01110 - Film/Tape Librarian	14.00
01115 - General Clerk I	11.10
01116 - General Clerk II	12.46
01117 - General Clerk III	14.38
01118 - General Clerk IV	16.72
01120 - Housing Referral Assistant	20.96
01131 - Key Entry Operator I	11.72
01132 - Key Entry Operator II	14.15
01191 - Order Clerk I	13.94
01192 - Order Clerk II	15.22
01261 - Personnel Assistant (Employment) I	12.32
01262 - Personnel Assistant (Employment) II	13.82
01263 - Personnel Assistant (Employment) III	15.95
01264 - Personnel Assistant (Employment) IV	18.55
01270 - Production Control Clerk	19.88
01290 - Rental Clerk	13.30
01300 - Scheduler, Maintenance	14.63
01311 - Secretary I	14.63
01312 - Secretary II	18.35
01313 - Secretary III	20.96
01314 - Secretary IV	23.74
01315 - Secretary V	28.15
01320 - Service Order Dispatcher	13.30
01341 - Stenographer I	13.02
01342 - Stenographer II	14.67

01400 - Supply Technician	23.74
01420 - Survey Worker (Interviewer)	13.51
01460 - Switchboard Operator-Receptionist	12.46
01510 - Test Examiner	18.35
01520 - Test Proctor	18.35
01531 - Travel Clerk I	11.75
01532 - Travel Clerk II	12.79
01533 - Travel Clerk III	13.80
01611 - Word Processor I	14.39
01612 - Word Processor II	16.17
01613 - Word Processor III	18.55
03000 - Automatic Data Processing Occupations	
03010 - Computer Data Librarian	14.48
03041 - Computer Operator I	14.48
03042 - Computer Operator II	16.25
03043 - Computer Operator III	19.21
03044 - Computer Operator IV	21.62
03045 - Computer Operator V	23.98
03071 - Computer Programmer I (1)	18.71
03072 - Computer Programmer II (1)	23.16
03073 - Computer Programmer III (1)	27.62
03074 - Computer Programmer IV (1)	27.62
03101 - Computer Systems Analyst I (1)	27.62
03102 - Computer Systems Analyst II (1)	27.62
03103 - Computer Systems Analyst III (1)	27.62
03160 - Peripheral Equipment Operator	14.48
05000 - Automotive Service Occupations	
05005 - Automotive Body Repairer, Fiberglass	18.44
05010 - Automotive Glass Installer	17.72
05040 - Automotive Worker	19.41
05070 - Electrician, Automotive	20.32
05100 - Mobile Equipment Servicer	17.66
05130 - Motor Equipment Metal Mechanic	21.21
05160 - Motor Equipment Metal Worker	19.41
05190 - Motor Vehicle Mechanic	21.21
05220 - Motor Vehicle Mechanic Helper	16.73
05250 - Motor Vehicle Upholstery Worker	18.55
05280 - Motor Vehicle Wrecker	19.41
05310 - Painter, Automotive	20.32
05340 - Radiator Repair Specialist	19.41
05370 - Tire Repairer	14.84
05400 - Transmission Repair Specialist	21.21
07000 - Food Preparation and Service Occupations	
(not set) - Food Service Worker	10.27
07010 - Baker	12.55
07041 - Cook I	13.37
07042 - Cook II	14.74
07070 - Dishwasher	9.34
07130 - Meat Cutter	16.21
07250 - Waiter/Waitress	9.68
09000 - Furniture Maintenance and Repair Occupations	
09010 - Electrostatic Spray Painter	20.21
09040 - Furniture Handler	14.58
09070 - Furniture Refinisher	20.21
09100 - Furniture Refinisher Helper	16.64
09110 - Furniture Repairer, Minor	18.45

09130 - Upholsterer	20.21
11030 - General Services and Support Occupations	
11030 - Cleaner, Vehicles	9.16
11060 - Elevator Operator	10.27
11090 - Gardener	13.41
11121 - House Keeping Aid I	9.43
11122 - House Keeping Aid II	10.27
11150 - Janitor	10.27
11210 - Laborer, Grounds Maintenance	11.13
11240 - Maid or Houseman	9.43
11270 - Pest Controller	14.09
11300 - Refuse Collector	10.27
11330 - Tractor Operator	12.72
11360 - Window Cleaner	11.13
12000 - Health Occupations	
12020 - Dental Assistant	15.08
12040 - Emergency Medical Technician (EMT)/Paramedic/Ambulance Driver	14.26
12071 - Licensed Practical Nurse I	11.87
12072 - Licensed Practical Nurse II	13.32
12073 - Licensed Practical Nurse III	14.91
12100 - Medical Assistant	13.32
12130 - Medical Laboratory Technician	13.32
12160 - Medical Record Clerk	13.32
12190 - Medical Record Technician	17.92
12221 - Nursing Assistant I	9.47
12222 - Nursing Assistant II	10.65
12223 - Nursing Assistant III	11.63
12224 - Nursing Assistant IV	13.05
12250 - Pharmacy Technician	14.96
12280 - Phlebotomist	13.32
12311 - Registered Nurse I	19.83
12312 - Registered Nurse II	24.24
12313 - Registered Nurse II, Specialist	24.24
12314 - Registered Nurse III	29.32
12315 - Registered Nurse III, Anesthetist	29.32
12316 - Registered Nurse IV	35.16
13000 - Information and Arts Occupations	
13002 - Audiovisual Librarian	19.79
13011 - Exhibits Specialist I	20.61
13012 - Exhibits Specialist II	22.47
13013 - Exhibits Specialist III	27.42
13041 - Illustrator I	21.68
13042 - Illustrator II	23.58
13043 - Illustrator III	28.84
13047 - Librarian	25.59
13050 - Library Technician	16.36
13071 - Photographer I	16.12
13072 - Photographer II	19.29
13073 - Photographer III	20.99
13074 - Photographer IV	25.66
13075 - Photographer V	31.05
15000 - Laundry, Dry Cleaning, Pressing and Related Occupations	
15010 - Assembler	8.06
15030 - Counter Attendant	8.06
15040 - Dry Cleaner	10.78
15070 - Finisher, Flatwork, Machine	8.06

15090 - Presser, Hand	8.06
15100 - Presser, Machine, Drycleaning	8.06
15130 - Presser, Machine, Shirts	8.06
15160 - Presser, Machine, Wearing Apparel, Laundry	8.06
15190 - Sewing Machine Operator	11.75
15220 - Tailor	12.72
15250 - Washer, Machine	9.05
19000 - Machine Tool Operation and Repair Occupations	
19010 - Machine-Tool Operator (Toolroom)	21.14
19040 - Tool and Die Maker	24.84
21000 - Material Handling and Packing Occupations	
21010 - Fuel Distribution System Operator	17.58
21020 - Material Coordinator	18.40
21030 - Material Expediter	18.40
21040 - Material Handling Laborer	12.69
21050 - Order Filler	13.89
21071 - Forklift Operator	14.00
21080 - Production Line Worker (Food Processing)	14.00
21100 - Shipping/Receiving Clerk	13.09
21130 - Shipping Packer	13.09
21140 - Store Worker I	11.33
21150 - Stock Clerk (Shelf Stocker; Store Worker II)	14.40
21210 - Tools and Parts Attendant	14.12
21400 - Warehouse Specialist	15.32
23000 - Mechanics and Maintenance and Repair Occupations	
23010 - Aircraft Mechanic	23.05
23040 - Aircraft Mechanic Helper	17.11
23050 - Aircraft Quality Control Inspector	23.72
23060 - Aircraft Servicer	19.26
23070 - Aircraft Worker	20.43
23100 - Appliance Mechanic	21.37
23120 - Bicycle Repairer	15.44
23125 - Cable Splicer	22.77
23130 - Carpenter, Maintenance	21.13
23140 - Carpet Layer	20.43
23160 - Electrician, Maintenance	24.26
23181 - Electronics Technician, Maintenance I	15.37
23182 - Electronics Technician, Maintenance II	21.64
23183 - Electronics Technician, Maintenance III	26.61
23260 - Fabric Worker	19.26
23290 - Fire Alarm System Mechanic	22.77
23310 - Fire Extinguisher Repairer	18.05
23340 - Fuel Distribution System Mechanic	22.77
23370 - General Maintenance Worker	15.09
23400 - Heating, Refrigeration and Air Conditioning Mechanic	22.64
23430 - Heavy Equipment Mechanic	21.69
23440 - Heavy Equipment Operator	22.35
23460 - Instrument Mechanic	22.77
23470 - Laborer	11.29
23500 - Locksmith	21.60
23530 - Machinery Maintenance Mechanic	21.67
23550 - Machinist, Maintenance	22.77
23580 - Maintenance Trades Helper	16.64
23640 - Millwright	22.20
23700 - Office Appliance Repairer	21.60
23740 - Painter, Aircraft	20.21

23760 - Painter, Maintenance	20.21
23790 - Pipefitter, Maintenance	24.26
23800 - Plumber, Maintenance	23.23
23820 - Pneudraulic Systems Mechanic	22.77
23850 - Rigger	21.10
23870 - Scale Mechanic	20.43
23890 - Sheet-Metal Worker, Maintenance	23.29
23910 - Small Engine Mechanic	19.31
23930 - Telecommunication Mechanic I	22.26
23931 - Telecommunication Mechanic II	23.81
23950 - Telephone Lineman	22.26
23960 - Welder, Combination, Maintenance	21.20
23965 - Well Driller	22.77
23970 - Woodcraft Worker	22.77
23980 - Woodworker	17.58
24000 - Personal Needs Occupations	
24570 - Child Care Attendant	8.35
24580 - Child Care Center Clerk	9.46
24600 - Chore Aid	9.28
24630 - Homemaker	10.89
25000 - Plant and System Operation Occupations	
25010 - Boiler Tender	25.42
25040 - Sewage Plant Operator	23.09
25070 - Stationary Engineer	23.99
25190 - Ventilation Equipment Tender	18.07
25210 - Water Treatment Plant Operator	22.43
27000 - Protective Service Occupations	
(not set) - Police Officer	32.66
27004 - Alarm Monitor	11.07
27006 - Corrections Officer	25.66
27010 - Court Security Officer	27.97
27040 - Detention Officer	25.66
27070 - Firefighter	25.58
27101 - Guard I	10.78
27102 - Guard II	12.20
28000 - Stevedoring/Longshoremen Occupations	
28010 - Blocker and Bracer	15.65
28020 - Hatch Tender	15.65
28030 - Line Handler	15.65
28040 - Stevedore I	14.96
28050 - Stevedore II	16.37
29000 - Technical Occupations	
21150 - Graphic Artist	25.32
29010 - Air Traffic Control Specialist, Center (2)	31.88
29011 - Air Traffic Control Specialist, Station (2)	21.98
29012 - Air Traffic Control Specialist, Terminal (2)	24.20
29023 - Archeological Technician I	13.37
29024 - Archeological Technician II	14.95
29025 - Archeological Technician III	18.52
29030 - Cartographic Technician	20.37
29035 - Computer Based Training (CBT) Specialist/ Instructor	25.92
29040 - Civil Engineering Technician	20.37
29061 - Drafter I	16.50
29062 - Drafter II	18.52
29063 - Drafter III	22.19
29064 - Drafter IV	24.13

29081 - Engineering Technician I	14.19
29082 - Engineering Technician II	17.76
29083 - Engineering Technician III	20.63
29084 - Engineering Technician IV	24.29
29085 - Engineering Technician V	28.71
29086 - Engineering Technician VI	33.67
29090 - Environmental Technician	20.85
29100 - Flight Simulator/Instructor (Pilot)	28.66
29160 - Instructor	23.14
29210 - Laboratory Technician	18.11
29240 - Mathematical Technician	24.13
29361 - Paralegal/Legal Assistant I	19.08
29362 - Paralegal/Legal Assistant II	21.64
29363 - Paralegal/Legal Assistant III	26.37
29364 - Paralegal/Legal Assistant IV	31.99
29390 - Photooptics Technician	20.49
29480 - Technical Writer	28.82
29491 - Unexploded Ordnance (UXO) Technician I	20.26
29492 - Unexploded Ordnance (UXO) Technician II	24.51
29493 - Unexploded Ordnance (UXO) Technician III	29.38
29494 - Unexploded (UXO) Safety Escort	20.26
29495 - Unexploded (UXO) Sweep Personnel	20.26
29620 - Weather Observer, Senior (3)	21.48
29621 - Weather Observer, Combined Upper Air and Surface Programs (3)	19.35
29622 - Weather Observer, Upper Air (3)	19.35
31000 - Transportation/ Mobile Equipment Operation Occupations	
31030 - Bus Driver	10.74
31260 - Parking and Lot Attendant	7.59
31290 - Shuttle Bus Driver	10.22
31300 - Taxi Driver	9.67
31361 - Truckdriver, Light Truck	11.09
31362 - Truckdriver, Medium Truck	11.65
31363 - Truckdriver, Heavy Truck	18.33
31364 - Truckdriver, Tractor-Trailer	18.33
99000 - Miscellaneous Occupations	
99020 - Animal Caretaker	10.13
99030 - Cashier	7.41
99041 - Carnival Equipment Operator	12.61
99042 - Carnival Equipment Repairer	13.30
99043 - Carnival Worker	10.19
99050 - Desk Clerk	8.35
99095 - Embalmer	20.47
99300 - Lifeguard	7.43
99310 - Mortician	20.61
99350 - Park Attendant (Aide)	9.35
99400 - Photofinishing Worker (Photo Lab Tech., Darkroom Tech)	7.43
99500 - Recreation Specialist	11.48
99510 - Recycling Worker	12.71
99610 - Sales Clerk	7.43
99620 - School Crossing Guard (Crosswalk Attendant)	8.85
99630 - Sport Official	7.43
99658 - Survey Party Chief (Chief of Party)	13.41
99659 - Surveying Technician (Instr. Person/Surveyor Asst./Instr.)	8.5
99660 - Surveying Aide	6.74
99690 - Swimming Pool Operator	13.16
99720 - Vending Machine Attendant	11.34

99730 - Vending Machine Repairer	13.16
99740 - Vending Machine Repairer Helper	11.34

ALL OCCUPATIONS LISTED ABOVE RECEIVE THE FOLLOWING BENEFITS:

HEALTH & WELFARE: Life, accident, and health insurance plans, sick leave, pension plans, civic and personal leave, severance pay, and savings and thrift plans.
Minimum employer contributions costing an average of $2.56 per hour computed on the basis of all hours worked by service employees employed on the contract.

VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 5 years, and 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractors in the performance of similar work at the same Federal facility. (Reg. 29 CFR 4.173)

HOLIDAYS: A minimum of eleven paid holidays per year: New Year's Day, Martin Luther King Jr's Birthday, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. A contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.)
(See 29 CFR 4.174)

THE OCCUPATIONS WHICH HAVE PARENTHESES AFTER THEM RECEIVE THE FOLLOWING BENEFITS (as numbered):

1) Does not apply to employees employed in a bona fide executive, administrative, or professional capacity as defined and delineated in 29 CFR 541. (See CFR 4.156)

2) APPLICABLE TO AIR TRAFFIC CONTROLLERS ONLY - NIGHT DIFFERENTIAL: An employee is entitled to pay for all work performed between the hours of 6:00 P.M. and 6:00 A.M. at the rate of basic pay plus a night pay differential amounting to 10 percent of the rate of basic pay.

3) WEATHER OBSERVERS - NIGHT PAY & SUNDAY PAY: If you work at night as part of a regular tour of duty, you will earn a night differential and receive an additional 10% of basic pay for any hours worked between 6pm and 6am. If you are a full-time employed (40 hours a week) and Sunday is part of your regularly scheduled workweek, you are paid at your rate of basic pay plus a Sunday premium of 25% of your basic rate for each hour of Sunday work which is not overtime (i.e. occasional work on Sunday outside the normal tour of duty is considered overtime work).

HAZARDOUS PAY DIFFERENTIAL: An 8 percent differential is applicable to employees employed in a position that represents a high degree of hazard when working with or in close proximity to ordinance, explosives, and incendiary materials. This includes work such as screening, blending, dying, mixing, and pressing of sensitive ordance, explosives, and pyrotechnic compositions such as lead azide, black powder and photoflash powder. All dry-house activities involving propellants or explosives. Demilitarization, modification, renovation, demolition, and maintenance operations on sensitive ordnance, explosives and incendiary materials. All operations involving regrading and cleaning of artillery ranges.

A 4 percent differential is applicable to employees employed in a position that represents a low degree of hazard when working with, or in close proximity to ordance, (or employees possibly adjacent to) explosives and incendiary materials which involves potential injury such as laceration of hands, face, or arms of the employee engaged in the operation, irritation of the skin, minor burns and the like; minimal damage to immediate or adjacent work area or equipment being used. All operations involving, unloading, storage, and hauling of ordance, explosive, and incendiary ordnance

material other than small arms ammunition. These differentials are only applicable to work that has been specifically designated by the agency for ordance, explosives, and incendiary material differential pay.

** UNIFORM ALLOWANCE **

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance:

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of $3.35 per week (or $.67 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

** NOTES APPLYING TO THIS WAGE DETERMINATION **

Source of Occupational Title and Descriptions:

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations," Fourth Edition, January 1993, as amended by the Third Supplement, dated March 1997, unless otherwise indicated. This publication may be obtained from the Superintendent of Documents, at 202-783-3238, or by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Copies of specific job descriptions may also be obtained from the appropriate contracting officer.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE {Standard Form 1444 (SF 1444)}

Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)} When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

1) When preparing the bid, the contractor identifies the need for a conformed occupation) and computes a proposed rate).

2) After contract award, the contractor prepares a written report listing in order proposed classification title), a Federal grade equivalency (FGE) for each proposed classification), job description), and rationale for proposed wage rate), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work.

3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).

4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.

5) The contracting officer transmits the Wage and Hour decision to the contractor.

6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper.

When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination.
Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

B-2 (high)

Reports Described in this Attachment J.1 (a) 3

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
1	Initial Financial Management Report	See Remarks	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION

Electronic submission to:

Contracting Officer's Technical Representative (COTR) Code FO, M/S 227-4 (1 cy)
CO Code JAZ, M/S: 227-4 (1 cy)
Financial Management Division, Code CF, M/S 203-18 (1 cy)
Resources Management Office (RMO), Code CR, M/S 237-9 (1 cy)

8. REMARKS

Submission 10 working days after effective date of contract.

An initial financial management report shall be submitted by the Contractor and each major subcontractor on NASA Form 533Q (or computer-generated version) in accordance with the instructions on the reverse side of the forms and the NASA Policy Guidance (NPG) 9501.2, *NASA Contractor Financial Management Reporting*, at URL http://nodis3.gsfc.nasa.gov/library/displayDir.cfm?Internal_ID=N_PG_9501_002D_&page_name=main and as set forth below.

Reporting categories shall be elements of cost including direct labor hours (excluding subcontract); direct labor hours (major subcontractors); direct labor costs (separated by prime and major subcontractor); overhead; other direct costs (ODCs), G&A; total costs; incentive fee and award fee; total cost plus fee. Overtime is to be reported separately for each of the above categories. ODCs include travel, material purchases, and subcontracts (other than major subcontractors). All of the above data is to be submitted for the base period.

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
2	Monthly Financial Management Report	Monthly	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION

Electronic submission to:

Contracting Officer's Technical Representative (COTR) Code FO, M/S 227-4 (1 cy)
CO Code JAZ, M/S: 227-4 (1 cy)
Financial Management Division, Code CF, M/S 203-18 (1 cy)
Resources Management Office (RMO), Code CR, M/S 237-9 (1 cy)

8. REMARKS

The Contractor shall deliver the NF 533M report no later than the 10th working day after end of accounting month being reported. And in accordance with the instructions on the reverse side of the forms and the NASA Policy Guidance (NPG) 9501.2*, NASA Contractor Financial Management Reporting*, at URL http://nodis3.gsfc.nasa.gov/library/displayDir.cfm?Internal_ID=N_PG_9501_002D_&page_name=main and as set forth below.

Reporting categories shall be elements of cost including direct labor hours (excluding subcontract); direct labor hours (major subcontractors); direct labor costs (separated by prime and major subcontractor); overhead; other direct costs (ODCs), G&A; total costs; incentive fee and award fee; total cost plus fee. Overtime is to be reported separately for each of the above categories. ODCs include travel, material purchases, and subcontracts (other than major subcontractors). All of the above data is to be submitted for the reporting period, the cumulative periods, the Government Fiscal Year cumulative, and the estimated costs to completion and at the contract level and division, branch, project, or category (e.g. maintenance, operations, facility) level. Formats will be agreed upon between the Contractor, COTR, and Contracting Officer.

Variances exceeding **5 percent** between planned dollars and actual dollars for each reporting category (at the total contract level only) shall be explained.

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
3	Quarterly Financial Management Report	Quarterly	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION

Electronic submission to:

COTR; Code FO, M/S 227-4 (1 cy)
CO; Code JAZ, M/S: 227-4 (1 cy)
Financial Management Division, Code CF, M/S 203-18 (1 cy)
Resources Management Office (RMO), Code CR, M/S 237-9 (1 cy)

8. REMARKS

The Contractor shall submit the NF 533Q not later than the 15th day of the month preceding the quarter (based on the Government Fiscal Year) being projected in accordance with the instructions on the reverse side of the forms and the NASA Policy Guidance (NPG) 9501.2*, NASA Contractor Financial Management Reporting*, at URL http://nodis3.gsfc.nasa.gov/library/displayDir.cfm?Internal_ID=N_PG_9501_002D_&page_name=main and as set forth below.

Reporting categories shall be elements of cost including direct labor hours (excluding subcontract); direct labor hours (major subcontractors); direct labor costs (separated by prime and major subcontractor); overhead; other direct costs (ODCs), G&A; total costs; incentive fee and award fee; total cost plus fee. Overtime is to be reported separately for each of the above categories. ODCs include travel, material purchases, and subcontracts (other than major subcontractors). All of the above data is to be submitted for the reporting period, the cumulative periods, the Government Fiscal Year cumulative, and the estimated costs to completion and at the contract level and division, branch, project, or category (e.g. maintenance, operations, facility) level. Formats will be agreed upon between the Contractor, COTR, and Contracting Officer.

Variances exceeding **5 percent** between planned dollars and actual dollars for each reporting category (at the total contract level only) shall be explained.

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
4	Monthly Technical Progress Report	Monthly	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
Electronic submittal to: COTR; Code FO, M/S 227-4 (1 cy) CO; Code JAZ, M/S: 227-4 (1 cy) New Technology Representative, Code DK, M/S 202A-3 (1 cy)	The Contractor shall submit separate monthly status reports of all work accomplished during each month of contract performance no later than ten (10) working days after the end of the month. Reports shall be in narrative form and brief and informal in content. Monthly reports shall include: a brief status of progress; issues, problems that may impede performance, and recommended action items for both the Government and the Contractor; staffing data and productivity metrics.

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
5	Contractor Monthly Accident Report	Monthly	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
Submittal shall be made in accordance with the requirements found at: http://cmar.arc.nasa.gov/	The Contractor electronically shall submit the Monthly Accident Report data to the Contractor Monthly Accident Report web-based system within 10 working days after each full month of completed service. A negative report is required.

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
6	Mishap Report	See Remarks	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
COTR; Code FO, M/S 227-4 (1 cy electronic) CO; Code JAZ, M/S 227-4 (1 cy) Office of Occupational Safety, Health, and Environmental Services, Code QH, M/S 218-1 (1 cy)	The Contractor shall submit NASA Mishap Report NF 1627 for any accident that meets one of the specific criteria described in the instruction on the form, within one working day of the mishap occurrence.

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
7	2nd/3rd Shift Roster	See Remarks	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
CO Code JAZ, M/S: 227-4 (1 cy) Protective Services Office, Code JP, M/S 15-1 (1 cy)	The Contractor shall provide the schedule/roster for its on-site 2nd and 3rd shifts, including employee names, locations, and scheduled work periods. As a minimum, the Contractor shall submit a revised roster when there are changes in personnel or hours scheduled.

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
8	Subcontracting Report SF 294	Semi-annually	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
CO, Code JAZ, M/S: 227-4 (original) Small Business Specialist, Code JAB, M/S 241-1 (1 cy)	The contractor shall submit Standard Form 294, utilizing the Interim Subcontract Reporting System (iSRS), in accordance with the instructions provided on the reverse of the form and in accordance with Section I, clause 52.219-9 *Small Business and Small Disadvantaged Business Subcontracting Plan.* The SF 294 is to be submitted semi-annually by the end of the month following the close of the reporting period. NASA has prepared a website for use when submitting the SF 294 https://prod.nais.nasa.gov/srs/iSRS_registration_help.html

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
9	Summary Subcontracting Report (SF 295)	Annually	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
NASA-HQ, Attn: HK/Office of Procurement, Washington DC 20546 (Original) CO, Code JAZ, M/S: 227-4 (1 cy) Small Business Specialist, Code JAB, M/S 241-1 (1 cy)	The contractor shall submit Standard Form 295 in accordance with the instructions provided on the reverse of the form and in accordance with Section I, clause 52.219-9 *Small Business and Small Disadvantaged Business Subcontracting Plan.* The SF 295 is to be submitted semi-annually by the end of the month following the close of the reporting period. NASA has prepared a website for use when submitting the SF 295 reports https://prod.nais.nasa.gov/srs/iSRS_registration_help.html

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
10	New Technology Reports	See Remarks	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☒ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
New Technology Representative, Code DK, M/S 202A-3 (original) CO, Code JAZ, M/S: 227-4 (1 cy) Patent Representative, Code DL, M/S 202A-4 (1cy)	The Contractor shall a New Technology Report for reportable items annually from contract award date and 3 months after contract completion, in accordance with NFS 1852.227-70, *New Technology*. A negative report is required even if there is no New Technology to report.

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
11	Centrally Reportable Equipment (DOD Industrial Plant Equipment Requisition System (DD 1419))	As Needed	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☒ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
Through COTR, code FO, M/S 227-4 Through CO, Code JAZ, M/S 227-4; to Equipment Management Specialist, Code JFS, M/S 255-2 (1 cy)	The Contractor shall submit a DD Form 1419, *DOD Industrial Plan Equipment Requisition*, for property screening 30 days prior to purchase of property. The DD Form 1419 will be prepared, for each item of centrally reportable equipment to be acquired over $1,000, in accordance with NFS 1845.502-70 and the preparation instructions in NFS 1845.7102.

DATA REQUIREMENTS LIST (DRL)

TITLE OF CONTRACT, PRODUCT, SOW, ETC.	CONTRACT/RFP NO.	DRL DATE/MOD DATE
Aerospace Testing and Facilities Operations and Maintenance	NNA04BA85C	November 1, 2002

1. LINE ITEM NO.	2. DRL TITLE	3. FREQUENCY	4. SUBMISSION DATE	5. COPIES
12	Property Management Report	Quarterly	See Remarks	See Distribution

6. DATA TYPE: ☒ Scheduled submittal ☐ Submittal upon request ☐ Submitted upon update ☐ Gov't Approval Required

7. DISTRIBUTION	8. REMARKS
COTR; Code FO; M/S: 227-4 (1 cy) CO, Code JAZ, M/S: 227-4 (1 cy) Equipment Management Specialist, Code JFS, M/S 255-2 (original)	The Contractor shall submit a Property Management Report itemizing all purchases for the quarter. All orders, items received, and prices must be included. The Contractor shall use DD Form 1149, DOD Requisition and Invoice/Shipping Document, to report Government property that is centrally reportable equipment to the NASA Equipment Management System (NEMS): 1) at the time of receipt and acceptance of accountability; 2) when major changes occur in the data initially submitted to NASA; and, 3) when the equipment is no longer required for or actively being used in pursuit of this contract. The Contractor shall indicate the current condition code of equipment reported pursuant to (3) above. Reportable data shall be forwarded through the Contracting Officer within 15 working days after the event that created the need for their preparation and shall be marked "FOR NEMS".

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
AMP/SIG COND, MAINFRAME			8		8
AMPLIFIER			2		2
AMPLIFIER, CHARGE			2		2
AMPLIFIER, DIFFERENTIAL	1		38	1	40
AMPLIFIER, DUAL TRACE			1		1
AMPLIFIER, FILTER			9		9
AMPLIFIER, ISOLATION	6				6
AMPLIFIER, MAINFRAME			35		35
AMPLIFIER, MAINFRAME/TRANSDCR			41		41
AMPLIFIER, PHOTO BEAM	1				1
AMPLIFIER, POWER			1		1
AMPLIFIER, SERVO	2				2
AMPLIFIER, STEREO				2	2
AMPLIFIER, VIDEO			2		2
AMPLIFIER/MAINFRAME TRANSDUCER			1		1
AMPLIFIER/TRANSDUCER			15		15
ANALYZER, BATTERY				2	2
ANALYZER, COMPRESSOR	1			1	2
ANALYZER, DATA COLLECTION				1	1
ANALYZER, FLOW			1	1	2
ANALYZER, HYDROCARBON				1	1
ANALYZER, LASER	1			1	2
ANALYZER, LOGIC			1		1
ANALYZER, MACHINERY				1	1
ANALYZER, OXYGEN	1				1
ANALYZER, PRESSURE			2		2
ANALYZER, SIGNAL			3	1	4
ANALYZER, SPECTRUM			1	1	2
ANALYZER, TRACE MOISTURE	1			2	3
ANALYZER, WAVE	16				16
ANEMOMETER			14	6	20
BALANCE, WIND TUNNEL			78		78
BAROMETER			3		3
BASE STATION, COMMUNICATIONS			4	1	5
BATH, SAND, FLUIDIZED				1	1
BEAM SPLITTER			1		1
BINDING MACHINE	1				1
BLAST CLEANING MACHINE	1			1	2
BLOWER, ELECTRIC				1	1
BOOSTER, RECORD			3	1	4
BORESCOPE	1				1
BORESCOPE, EXPANDABLE	1				1
BRAKE MACHINE				2	2
BREADBOARD, OPTICAL	1				1
BREAK, SHEET METAL				1	1
BRIDGE, STANDARD			1		1
CABINET, DISK DRIVE			1		1
CABINET, ELECTRICAL EQUIPMENT	1				1
CABINET, SERVO DRIVE			1		1
CALIBRATION STANDARD			1		1
CALIBRATION UNIT	1		1	1	3
CALIBRATION UNIT, PNEUMATIC			1		1
CALIBRATION UNIT, PRESSURE			132		132
CALIBRATION UNIT, RESISTANCE			2		2
CALIBRATOR	1			2	3
CALIBRATOR, ANEMOMETER			1		1
CALIBRATOR, DRY-WELL			1		1
CALIBRATOR, ELECTRO-PNEUMATIC				1	1
CALIBRATOR, FREQUENCY				1	1
CALIBRATOR, MICROPHONE			1		1
CALIBRATOR, PRESSURE	1	1	19		21
CALIBRATOR, PROGRAMMABLE			1		1
CALIBRATOR, SERVO			2		2
CALIBRATOR, TEMPERATURE			1	2	3
CALIBRATOR, THERMOCOUPLE			2		2
CALIBRATOR, VOLTAGE			26		26
CAMCORDER				1	1
CAMERA, BODY			3		3
CAMERA, CID IMAGE SENSOR			1		1
CAMERA, DATA RECORDING 16MM	1				1
CAMERA, DIGITAL	1	2	15	10	28
CAMERA, INFRARED				1	1
CAMERA, STILL PICTURE	3		8		11
CAMERA, STREAK-FRAMING	1				1
CAMERA, TELEVISION	4	2	27	3	36
CAMERA, VIDEO	2	1			3
CAMERA, VIDEO, SURVELLIANCE			1		1
CARD, VXI			3		3
CARD, VXI, 64 CH			3		3
CELLULAR TELEPHONE	1				1

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
CENTRIFUGE, ACCELERATOR	1				1
CHARGER-ELIMINATOR, BATTERY				2	2
CHASIS, ELECTRICAL,ELECTRONIC			1		1
CHASSIS, 13 SLOT			13		13
CHASSIS, DIAGNOSTIC TEST			1		1
CHASSIS, DISK DRIVE			2		2
CHASSIS, ELECTRICAL, ELECTRONI			1		1
CHASSIS, EXPANSION			28		28
CHASSIS, VME			13		13
CHASSIS, VXI			17		17
CIRCULATOR, COOLANT			1		1
CLEANER, HIGH PRESSURE		1			1
CLEANER, ULTRASONIC	1				1
CLEANER, VACUUM	1				1
CLINOMETER, ELEVATION				3	3
CLOCK, DIGITAL			1		1
COLLIMATOR, ELECTRONIC			1		1
COLORIMETER	1				1
COMPARATOR, OPTICAL	1				1
COMPRESSOR, AIR				1	1
COMPUTER, MAINFRAME				1	1
COMPUTER, MICRO	41	17	162	86	306
COMPUTER, MINI		4	60	22	86
COMPUTER, PORTABLE	4	5	36	16	61
CONCENTRATOR, COMMUNICATIONS			1	1	2
CONDITIONER, LINE				2	2
CONSOLE, REMOTE CONTROL			1		1
CONTROL ROOM SUBSYSTEM			1		1
CONTROL SYSTEM			1		1
CONTROL UNIT, CAMERA			3		3
CONTROL UNIT, CAMERA, TV	1				1
CONTROL UNIT, DATA ACQUISITION			3	1	4
CONTROL UNIT, LASER	1				1
CONTROL UNIT, POWER SOLENOID			1		1
CONTROL UNIT, POWER SUPPLY			1		1
CONTROL UNIT, RECEIVER			2		2
CONTROL UNIT, SWITCH			4		4
CONTROL VALVE, DIGITAL		6			6
CONTROLLER, AIRFOIL TEST SYS			1		1
CONTROLLER, CHANNEL STEPPER			1		1
CONTROLLER, CHASSIS			2		2
CONTROLLER, ELECTRONIC			2	1	3
CONTROLLER, MASS FLOW	1				1
CONTROLLER, MASTER CAMERA			1		1
CONTROLLER, MOTION			2		2
CONTROLLER, MOTION PRECISION			1		1
CONTROLLER, MOTOR				3	3
CONTROLLER, PRESSURE	1		2		3
CONTROLLER, PROGRAMMABLE			1		1
CONTROLLER, RAID			1		1
CONTROLLER, SCANNER			1		1
CONTROLLER, SERVO			1		1
CONTROLLER, TEMPERATURE				1	1
CONTROLLER, TRANSVERSE			1		1
CONTROLLER, VME			2		2
CONVERTER, ANALOG/DIGITAL				1	1
CONVERTER, ASTROCODER RESOLVER			1		1
CONVERTER, DIGITAL/ANALOG			5		5
CONVERTER, DUAL FREQUENCY			2		2
CONVERTER, FREQUENCY DUAL			2		2
CONVERTER, SCAN			15		15
COUNTER, ELECTRONIC	3				3
COUNTER, TIME INTERVAL	57				57
CRANE, FLOOR, FIXED BOOM				1	1
CRANE, FLOOR/HYDRAULIC		1			1
CRATE, POWERED CAMAC	3				3
CRIMPER/TOOLING KIT				1	1
CTA UNIT			3		3
CURRENT SOURCE, PRECISION	1				1
DATA ACQ SYSTEM, ROTOR MOUNTED			1		1
DATA ACQUISITION SYSTEM			112		112
DATA ACQUISITION UNIT			34		34
DATA ACQUISITION/CONTROL UNIT			2		2
DATA DISK, VXI			2		2
DATA TERMINAL, MOBIL			1		1
DECOMMUTATION SYSTEM			2		2
DETECTOR LEAK, ULTRASONIC		1			1
DETECTOR, FLAW, ULTRASONIC				1	1
DETECTOR, GAS	3			4	7
DETECTOR, LEAK	1				1

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
DETECTOR, LEAK, ULTRASONIC		1			1
DETECTOR, MOISTURE		1			1
DETECTOR, PARTICLE				1	1
DEVICE, LEVEL SENSING			1		1
DIGITAL MULTIPLEXER			3		3
DIGITIZER			7	3	10
DIGITIZER UNIT, SCANNER			4		4
DIGITIZER, 4 CHANNEL				1	1
DIGITIZER, MULTICHANNEL				1	1
DIGITIZER, SCANNER			3		3
DIGITIZER, TABLET			1		1
DIGITIZER, WAVEFORM	6				6
DISK DRIVE UNIT	6		271	12	289
DISK DRIVE, OPTICAL			1	3	4
DISK STORAGE SYSTEM			1		1
DISPLAY UNIT	21	20	258	67	366
DISPLAY UNIT, PRESSURE	1				1
DISPLAY UNIT, REMOTE			1		1
DRILL PRESS	3			3	6
DRILL PRESS, MAGNETIC				1	1
DRILL PRESS, RADIAL	1				1
DRILL PRESS, STATIONARY	1				1
DRILL, PNEUMATIC				1	1
DRILLING/MILLING MACHINE				1	1
DRIVE, COMPACT DISK			2		2
DRIVE, ZIP				2	2
DRYER, AIR, REFRIGERATED				1	1
DUMP PUMP		1			1
DUPLICATOR, HARD DRIVE			1		1
DYNAMOMETER		1			1
ENCLOSURE, DISK DRIVE			1		1
ENCLOSURE, VME			26		26
ENCODER, REMOTE CONT			1		1
ENCODER, SHAFT POSITION	1				1
ENGRAVING MACHINE				1	1
ERASER, MAGNETIC TAPE			1		1
EXCITER, CALIBRATION			1		1
EXPANDER COLLMATOR SCOPE			1		1
EXPANDER, BEAM			3		3
EXPANDER, BOX			1		1
EXPANDER, DIOII			1		1
EXPANSION BOX			2		2
EXPANSION CHASSIS			2		2
EXPANSION UNIT			4		4
EXTENDER, BUS	3				3
EXTENDER, I/O			24		24
EXTENDER. I/O			8		8
FIBERSCOPE				1	1
FIBERSCOPE, CAMERA		1			1
FILTER, BANDPASS			7		7
FILTER, PROGRAMMABLE			6		6
FIRING PANEL	3				3
FLOWMETER, LIQUID	1				1
FLOWMETER, ULTRASONIC SYSTEM				1	1
GAGE, BOURDON TUBE	1				1
GAGE, PRESSURE	2				2
GAGE, THICKNESS	1				1
GAGING MACHINE				1	1
GAUGE, MASTER BALANCE			1		1
GAUGE, PRESSURE DIGITAL			3		3
GENERATOR			1	1	2
GENERATOR, AEROTHERM	1				1
GENERATOR, DIESEL ENGINE				1	1
GENERATOR, FLAME				1	1
GENERATOR, FUNCTION			8		8
GENERATOR, NOISE			2		2
GENERATOR, PULSE	1		3		4
GENERATOR, SIGNAL			4		4
GENERATOR, SWEEP			2		2
GENERATOR, SYNC PULSE			1		1
GENERATOR, TIME CODE			10		10
GENERATOR, TIME CODE/TRANSLATR			2		2
GENERATOR, TIMING			1		1
GRINDER, CYLINDER				1	1
GRINDER, DRILL				1	1
GRINDER, SURFACE				1	1
HARD DRIVE UNIT			3	1	4
HEAD DIVIDING OPTICAL				1	1
HEAD EXCITER, STUDY MODE			1		1
HEAD, SPOT FLASH	1				1

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
HEATER, RADIANT	1		1		2
HOIST	1			1	2
HOIST, AIR CHAIN				2	2
HOIST, PLATFORM			1		1
HUB, NETWORK COMMUNICATIONS	1				1
HYDRAULIC SYSTEM, TEST STAND				1	1
HYGROMETER			6		6
INCLINOMETER			15		15
INDEXER, MICROSTEP			7		7
INDICATOR, ANALOG			1		1
INDICATOR, ANGLE			1		1
INDICATOR, DIGITAL		1	1		2
INDICATOR, POSITION			3		3
INDICATOR, STRAIN			6		6
INERTIAL MEASURING INSTRUMENT	1				1
INTERCOM STATION				4	4
INTERFACE MODULE, SCANNER			5		5
INTERFACE UNIT	3				3
INTERFACE UNIT, ADP			31		31
INTERFACE UNIT, FIBER OPTIC			7		7
INTERFACE UNIT, MODULE			3		3
INTERFACE UNIT, SCANNER			17		17
IRON WORKER, HYDRAULIC				1	1
KERR CELL SYSTEM	1				1
LABELING MACHINE, LETTER				1	1
LAPPING MACHINE				1	1
LASER TRACKING SYSTEM		2			2
LASER, ARGON ION	1				1
LASER, DIODE			1		1
LASER, HELIUM-NEON	1		3		4
LASER, HOLOGRAPHIC	1				1
LATHE	3			2	5
LATHE, BENCH TYPE	1				1
LATHE, ENGINE	2			5	7
LATHE, POLISH & BUFF				1	1
LATHE, TOOLMAKERS	2			3	5
LATHE, TOOLROOM	1			1	2
LENS			1		1
LENS, CAMERA	4		2		6
LENS, CAMERA, INFRARED			1		1
LENS, TELESCOPE	1				1
LENS, TV CAMERA	1	1	3		5
LEVEL, ELECTRONIC				1	1
LEVEL, LASER				1	1
LIFT, PERSONNEL	1			6	7
LIFT, PLATFORM				1	1
LIGHT SOURCE	1		4		5
LIGHT SOURCE, CARBON ARC	1				1
LINEARIZER			9		9
LOCAL SLAVE UNIT			4		4
LOX/LN2 PLANT - COMPRESSORS				2	2
MACHINE, STENCIL				2	2
MAINFRAME	4	1			5
MAINFRAME, ELECTRONICS			9	2	11
MAINFRAME, VXI			5		5
MANOMETER, ELECTRONIC	4	1	5		10
MARKING MACHINE, WIRE		1			1
MASTER CONTROL, CAMERA			1		1
MEASUREMENT SYSTEM, FLOW			6		6
MEASUREMENT SYSTEM, PRESSURE	1		43		44
MEASURING SYS, DISPLACEMENT			1		1
MEASURING SYSTEM		1	5		6
MEGOHMETER, HIGH VOLTAGE	1				1
MICROMETER			1		1
MICROSCOPE, BINOCULAR	1				1
MICROSCOPE, MANTIS REWORKER	1				1
MICROSCOPE, PYROMETER	1				1
MICROSCOPE, STEREO			1		1
MILLING MACHINE	3			3	6
MILLING MACHINE, TURRET				1	1
MILLING MACHINE, VERTICAL	2			5	7
MIRROR, OPTICAL, SEGMENTED	2				2
MIRROR, PLANE				1	1
MIXER, AUDIO/VIDEO			2		2
MODULE C0NTROL			1		1
MODULE CALIBRATOR UNIT			2		2
MODULE, ANALOG, SUM/DIFFERENCE			2		2
MODULE, AVERAGING DVM			1		1
MODULE, CABLE SERVICE			4		4
MODULE, FRAMING PLUG-IN	1				1

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
MODULE, INPUT			15		15
MODULE, LINEARIZER			5		5
MODULE, RMS SIGNAL			1		1
MODULE, SERVICE WIND TUNNEL			1		1
MODULE, SIGNAL PROCESSOR			1		1
MODULE, SOURCE			3		3
MODULE, ZOC INTERFACE UNIT			1		1
MONITOR, DISPLACEMENT			1		1
MONITOR, GAS	1				1
MONITOR, POWERMATE			1		1
MONITOR, SAFETY				1	1
MONITOR, TELEVISION	7		41	4	52
MONITOR, TV WAVEFORM			2		2
MONITOR, VIDEO			46		46
MONITOR, VIDEO SYSTEM			1	8	9
MONITORING SYS, TEMP/PRESSURE				1	1
MONOCHROMATOR	1				1
MOTION CONTROLLER				1	1
MOTOR, MICROSTEP			18		18
MOTOR-GENERATOR		2			2
MULTIMETER, DIGITAL			36		36
MULTIPLEXER			1		1
MULTIPLEXER, CHANNEL			2		2
MULTIPLEXER, REMOTE	1				1
MULTIPROGRAMMER			5		5
OHMMETER	1			1	2
OPTICAL DISK LIBRARY			2		2
OPTICAL READER, DATA ENTRY		1	1		2
OSCILLATOR, RF	1				1
OSCILLOGRAPH, RECORDING	1		3	3	7
OSCILLOSCOPE	17		57	9	83
OSCILLOSCOPE/PLOTTER		1			1
OVEN, HEATING				1	1
OVEN, THERMAL DRYING, ELECTRIC	1				1
PALLET JACK, WEIGHING			1		1
PAN-TILT HEAD, REMOTE CONTROL			1		1
PLATFORM, TELESCOPING				1	1
PLATFORM, WORK AERIAL				1	1
PLAYER, COMPACT DISK	3		6	2	11
PLOTTER	1			1	2
PLOTTER, GRAPHIC			1		1
PLOTTER, GRAPHICS			1		1
PLOTTER, SIZE A			1		1
PLUG-IN UNIT, ELECTRONIC			44	3	47
POWER SOURCE, AC			1		1
POWER SOURCE, WELDER				1	1
POWER SUPPLY	6	2	56	8	72
POWER SUPPLY LAMP			3		3
POWER SUPPLY, DUAL DC			1		1
POWER SUPPLY, HIGH VOLTAGE				1	1
POWER SUPPLY, ISOLATION			2		2
POWER SUPPLY, LAMP	1		2		3
POWER SUPPLY, MAINFRAME			1		1
POWER SUPPLY, MANOMETER	2				2
POWER SUPPLY, MICROPHONE			19		19
POWER SUPPLY, PHOTOMULTIPLIER			4		4
POWER SUPPLY, RACK MOUNTED			1		1
POWER SUPPLY, RAOC	1				1
POWER SUPPLY, REMOTE			3		3
POWER SUPPLY, SDI			1		1
POWER SUPPLY, WELDING	1				1
POWER SUPPLY/DC AMPLIFIER			1		1
POWER SYSTEM, UNINTERRUPTABLE				3	3
POWER UNIT, HYDRAULIC				1	1
PRESAMPLE CONDITION UNIT			2	1	3
PRESS, HYDRAULIC				1	1
PRESS, HYDRAULIC 20 TON				1	1
PRESS, PUNCH				1	1
PRESSURE GAGE, DIGITAL			4		4
PRESSURE GAGE, PORTABLE			3		3
PRESSURE STANDARD	1				1
PRESSURE, PORTABLE			1		1
PRINTER, ADP	9	7	43	20	79
PRINTER, COLOR			4	1	5
PRINTER, COLOR, LASERJET				2	2
PRINTER, DESKJET				2	2
PRINTER, INKJET		1	1		2
PRINTER, LABEL			1		1
PRINTER, LASER		2	9	2	13
PRINTER, LASERJET	1	5	17	5	28

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
PRINTER, LASERWRITER		1	1	3	5
PROBE, HIGH VOLTAGE	1				1
PROBE, ULTRASOUND			1		1
PROCESS CONTROL SYSTEM			1		1
PROCESSOR			1		1
PROCESSOR, SYSTEM			2		2
PROGRAMMING STATION				1	1
PROJECTOR, DATA GRAPHICS	1				1
PROJECTOR, LCD			1		1
PROJECTOR, OVERHEAD			1		1
PROJECTOR, VIDEO			1		1
PULLER SET, HYDRAULIC	1				1
PUMP, HYDRAULIC	1	1		2	4
PUMP, VACUUM	5		2	2	9
PUMPING UNIT, HYDRAULIC		2			2
PUNCH, TURRETT				2	2
PURIFIER, HYDRAULIC OIL	1				1
PYROMETER, INFRARED	1			1	2
PYROMETER, MONOCHROMATIC	4				4
PYROMETER, OPTICAL	5				5
RACK, ANEMOMETER MAIN FRAME			1		1
RACK, ELECTRONIC EQUIPMENT				3	3
RACK/POWER SUPPLY			6		6
RADIO, FIXED STATION			1	1	2
RADIOGRAPHIC SYSTEM, PULSED	1				1
READER, MICROFICHE	1				1
READER, TIME CODE			1		1
READOUT UNIT, DIGITAL				1	1
READOUT, DIGITAL	1		2		3
RECEIVER CONTROL UNIT			1		1
RECEIVER, BOARD			2	1	3
RECEIVER, CONTROL UNIT			2		2
RECEIVING OPTICS ASSY			1		1
RECIRCULATOR, REFRIGERATED			1		1
RECORDER				1	1
RECORDER, CHANNEL	1				1
RECORDER, CHART	1			1	2
RECORDER, DATA			1		1
RECORDER, DATA LOGGER		1		1	2
RECORDER, DIGITAL			1		1
RECORDER, MULTIPORT				2	2
RECORDER, PLATFORM				1	1
RECORDER, STRIP CHART	3	1	3	6	13
RECORDER, TIME LAPSE			3		3
RECORDER, VIDEO CAMERA		1			1
RECORDER, VIDEO CASSETTE	3	1	33	1	38
RECORDER, X-Y	1				1
REFERENCE JUNCTION				5	5
REFERENCE SOURCE, DC			4		4
REGULATOR, ISOLATION			7		7
REGULATOR, PRESSURE, ABSOLUTE				1	1
REMOTE CONTROL STATION				1	1
REMOTE DISPLAY			6		6
REMOTE PROCESSOR			1		1
RESOLVER, SIMULATOR			1		1
ROTATING MOUNT			2		2
ROTATOR, POLARIZATION			2		2
ROUTER, COMMUNICATION			1		1
ROUTER, COMMUNICATIONS		1	10		11
ROUTING SYSTEM, VIDEO			1		1
SAFETY TEST STAND				1	1
SAMPLING UNIT, OIL				1	1
SAND MIXING MACHINE	1				1
SANDER				1	1
SANDER, DISC				1	1
SAW, BAND, METAL	3			10	13
SCALE, DIGITAL CRANE				1	1
SCALE, PORTABLE 100TON				1	1
SCALE, PORTABLE 35TON				1	1
SCALE, WEIGHING		1			1
SCANNER			1	1	2
SCANNER CARD, STRAIN GAGE			1		1
SCANNER INTERFACE MODULE			1		1
SCANNER JUNCTION UNIT			10		10
SCANNER, ANALYZER			10		10
SCANNER, CHANNEL VOLTAGE			5		5
SCANNER, DIGITIZER			2		2
SCANNER, DIGITIZER INTERFACE			3		3
SCANNER, DIGITIZER UNIT			33		33
SCANNER, DIGITIZING UNIT			1		1

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
SCANNER, DISPLAY			1		1
SCANNER, DOCUMENT		1			1
SCANNER, IMAGE	1				1
SCANNER, INTERFACE MODULE			7		7
SCANNER, INTERFACE UNIT			8		8
SCANNER, JUNCTION BOX			17		17
SCANNER, JUNCTION UNIT			14		14
SCANNER, PRESSURE	3		140		143
SCOPEMETER			2	2	4
SENSOR, PRESSURE	10		8		18
SERVER, COMMUNICATIONS			4		4
SERVER, TERMINAL			3		3
SET UP AND CHECK OUT SYSTEM			1		1
SHEARING MACHINE, MANUAL				1	1
SHEARING MACHINE, SQUARING				2	2
SIGNAL CONDITIONER				5	5
SIGNAL CONDITIONING UNIT	8		5	1	14
SIMULATOR, ACCELEROMETER			1		1
SIMULATOR, CALIBRATOR	1				1
SIMULATOR, MODEL SUPPORT				1	1
SIMULATOR, RESOLVER/SYNCHRO			1		1
SLIP RING ASSEMBLY			2		2
SOLDER HEAD, WELD/REFLOW	2				2
SOURCE, BLACKBODY RADIATION	2				2
SOURCE, CALIBRATION				1	1
SOURCE, ILLUMINATION, LED			2		2
SOURCE, RTD CURRENT		1		1	2
SOURCE, UNIVERSAL			2		2
SPECTROGRAPH, GRATING	1				1
SPECTROGRAPH, PRISM	1				1
SPECTROMETER, MULTISPECTRUM	1				1
SPRAY PAINTING OUTFIT, AIRLESS				1	1
SPRAYER, PAINT				1	1
STACKER, PRINTER PAPER			1		1
STAGE, ROTATION			1		1
STAND, SUPPORT & TEST			1		1
STANDARD, BRIDGE			1		1
STENCIL MACHINE				1	1
STORAGE SYSTEM, DISK			8		8
STRAIN GAGE MODULE			1		1
SWAGING MACHINE	1				1
SWAGING MACHINE, HYDRAULIC	2				2
SWEEPER, SPACE				1	1
SWITCH, DATA			2		2
SWITCH, ETHERNET			2		2
SWITCHING UNIT			22		22
SWITCHING UNIT, AUDIO-VIDEO			1		1
SYNCHRONIZER, BIT			2		2
SYNTHESIZER, FREQUENCY			2		2
SYNTHESIZER, MULTIFUNCTION			20		20
SYSTEM, DATA ACQUISITION			59		59
SYSTEM, VIBRATION TEST			1		1
TABLE, LASER	1				1
TABLE, OPTICAL	1		5		6
TACHOMETER, MODULE TRIGGER			3		3
TAPE BACKUP UNIT			2		2
TAPE DRIVE SYSTEM			1		1
TAPE DRIVE UNIT			18	1	19
TAPE DRIVE, DIGITAL			3		3
TAPE, LIBRARY			1		1
TELEMETRY SYSTEM			1		1
TELESCOPE			1		1
TELESCOPE, BEAM EXPANSION			2		2
TENSIONERS, CAPACITY	12				12
TERMINAL DATA PROCESSING			22		22
TERMINAL, DATA PROCESSING			238	7	245
TERMINAL, GRAPHICS			1		1
TEST FIXTURE INPUT			1		1
TEST FIXTURE OUTPUT			1		1
TEST HEAD/BASE				1	1
TEST SET, HIGH VOLTAGE	1				1
TEST STAND, HYDRAULIC		1		2	3
TEST, MEMORY CHIPS			2		2
TESTER, HARDNESS				1	1
TESTER, HARDNESS, METALS				3	3
TESTER, INSULATION				1	1
TESTER, MOTOR CIRCUIT	1				1
TESTER, TENSILE				1	1
TESTER, WIRE INSULATION	1				1
THEODOLITE				1	1

	Custodial Organization				
GFE Item Description	**ASF**	**FO**	**FOI**	**FOO**	**Grand Total**
THERMOCOUPLE, SCANNER			1		1
THERMOMETER, INFRARED	2				2
THREADING MACHINE				3	3
TIME/COUNTER			1		1
TIMER/COUNTER, HIGH RESOLUTION			1		1
TOOL, SWAGING, 5130-712-4855				1	1
TORCH, CUTTING	1				1
TORQUE MULTIPLIERS, ELECTRONIC				1	1
TORQUE WRENCH	1				1
TORQUE WRENCH, PRESET				4	4
TORQUE, PNEUMATIC			1		1
TRACTOR, AIRCRAFT TOWING				1	1
TRANSCEIVER, RADIO	23		89	1	113
TRANSDUCER CONDITIONING SYSTEM			25		25
TRANSDUCER, DIGIQUARTZ			1		1
TRANSDUCER, ENCLOSURE			2		2
TRANSDUCER, PRESSURE	6		24		30
TRANSFORMER, GUN TYPE				1	1
TRANSIT				1	1
TRANSIT, JIG			2		2
TRANSLATOR, PROGRAMMABLE			1		1
TRANSLATOR, STEPPING MOTORS				1	1
TRANSMITTER	1				1
TRANSMITTER, DIGIQUARTZ			8		8
TRANSMITTER, INTERFACE				2	2
TRANSMITTER, PRESSURE			94	3	97
TRANSMITTER, TIME CODE			1		1
TRANSPORT, MAGNETIC TAPE			13	2	15
TRAVERSE, CONTROL SYSTEM			1		1
TRIPOD, VIDEO				1	1
TRUCK, DELIVERY			1	12	13
TRUCK, DUMP				1	1
TRUCK, ELECTRIC			2		2
TRUCK, HAND				1	1
TRUCK, LIFT, BOOM				2	2
TRUCK, LIFT, ELECTRIC				2	2
TRUCK, LIFT, FORK				9	9
TRUCK, LIFT, HYDRAULIC 2000				1	1
TRUCK, LIFT, PERSONNEL				1	1
TRUCK, SCISSOR LIFT				2	2
TUBE FLARING MACHINE				2	2
TUBE PRESSURE INPUT			2		2
TUBE, PRESSURE INPUT			29		29
TYPEWRITER			1		1
UNIT, MODULE PROTECTION			5		5
VACUUM SYSTEM	1		1		2
VACUUM, WET DRY				1	1
VALVE, GATE	1				1
VECTORSCOPE			3		3
VIBRATION EXCITER SYSTEM			1		1
VIBREX SYSTEM KIT, BASIC				1	1
VIDEO KEYER, ASSEMBLY			5		5
VISION, READOUT	1				1
VOLTMETER			6	1	7
VOLTMETER, DIGITAL	3		15		18
VOLTMETER, RMS			8		8
WASHER, PRESSURE	1				1
WELDER, ARC	1			5	6
WELDER, RESISTANCE				2	2
WELDER, SPOT	1				1
WELDING MACHINE	1			1	2
WELDING SYSTEM				1	1
WINCH, AIR				1	1
WORK STATION, ENGINEER				1	1
WORK STATION, OPERATOR				1	1
WRENCH, TORQUE, HYDRAULIC	1				1
WRENCH, TORQUE, PNEUMATIC				1	1
WRITER, COMPACT DISC			1		1
Grand Total	466	108	3624	605	4803

Facilities Descriptions

Unitary Plan Wind Tunnel Facility (UPWT)

The Unitary Plan Wind Tunnel Facility is comprised of three separate closed return wind tunnel circuits with individual test sections sharing a common power source and other auxiliary subsystems. The three research test sections are the 11-Foot TWT, the 9 x 7 Foot SWT, and the 8 x 7 Foot SWT. The facility also has Model Preparation Rooms used for buildup, calibration and checkout of models prior to wind tunnel test entry.

The three wind tunnels are unique in operating characteristics: the 11-Foot TWT has a Mach number range of 0.3 to 1.5, the Mach number range of the 9 x 7 Foot SWT is 1.5 to 2.5 and that of the 8 x 7 Foot SWT is 2.5 to 3.5. The tunnels are variable density with a total pressure range from approximately 10" to 60" Hg absolute. Only one test section can be utilized for wind tunnel testing at a time due to the sharing of a common main drive system. The airflow for the tunnels is provided by coupling the drive motors to one of the two axial flow compressors: a three-stage for the 11-Foot TWT; and an eleven-stage common to both the 9 x 7 Foot SWT and 8 x 7 Foot SWT (air flow diversion valves are used to select the 9 x 7 Foot SWT or 8 x 7 Foot SWT tunnels).

The Auxiliary Equipment is comprised of the equipment within the Unitary Plan Wind Tunnel Facility that is shared by all three wind tunnels. This includes the main drive motors and their couplings, the emergency electrical power, the Make-Up-Air (MUA) system, the lubrication systems for the motors and compressors, the diesel generator set, vacuum systems, instrument air system, and the main cooling water system. Controls for the shared systems are duplicated at each test section's control room and at control panels in the Auxiliary Equipment building. A key interlock system limits control to one control console at a time.

12-Foot Pressure Wind Tunnel (PWT)

The 12-Foot PWT is a variable density, low turbulence, closed circuit, subsonic wind tunnel with a solid wall test section and auxiliary subsystems. A large contraction ratio combined with fine mesh screens provides the facility with its unique capability of producing a low turbulence air stream. The air speed of the tunnel is continuously variable from Mach 0 to Mach 0.60. The total pressure is variable from 0.25 to 6.0 atmospheres absolute. The settling chamber, located upstream of the test section, has a larger diameter than the test section, which reduces the velocity of the air stream. The low speed in the settling chamber, together with five fine mesh screens stretched across the inside of the chamber at its maximum diameter point, reduces turbulence and tends to straighten the air flow before the flow accelerates through the 20:1 contraction to the test section.

Propulsion Simulator Calibration Laboratory (PSCL)

The PSCL consists of a large tank in which a model is installed on a load monitoring frame. The pressure inside the tank is reduced below one atmosphere to simulate the static pressure in a wind tunnel test section. Air can be supplied to the simulator inlet at stagnation temperatures and pressures in order to completely simulate a wind tunnel environment. Highly accurate flow and force measurements are taken to obtain wind-off tares prior to installing the model into a wind tunnel. Four centrifugal compressors, connected in parallel and placed in series with a single centrifugal compressor, vary the pressure in the calibration cell.

Balance Calibration Laboratory (BCL)

The BCL performs calibrations on all types of strain gage balances used to measure forces on aerodynamic models installed in the test facilities. The BCL is equipped with two semi-automatic calibration machines, hand load rigs to calibrate unusual configurations, and data acquisition/reduction computers. The outputs of the facility are the gage constants and interactions that are used in a wind tunnel test to reduce the measured gage output to engineering units of force and moment.

Fluid Mechanics Laboratory (FML)

The FML is designed for general fluid mechanics research. Much of the wind tunnel research will be conducted in small-scale facilities with test sections of the order of one foot by one foot. Some of the test cells depend on the FML compressor as a vacuum source. The test cells operate from subsonic to transonic speeds. The FML is designed with an integral computer network and uses dedicated computers at each tunnel for data acquisition and experiment-theory integration.

The compressor has a capacity of 240,000 actual cubic feet per minute, at 8.3 pounds per square inch absolute inlet pressure, and provides suction to drive the test cells. The compressor has a digital control system that maintains a constant vacuum at the test cells. The controls also maintain the flow rate and automatically shut down the compressor in case of any indication of abnormal operation.

Arc Jet Air System (3000psig)

The AJAS consists of two parts: the air generation and storage subsystem and the high pressure air distribution network. The air generation and storage subsystem consists of four reciprocating compressors (from 900 HP to 5500 HP), three storage units (500,000 SCF to 6,000,000 SCF at 3000 psig), the interconnecting piping and valving, and all the associated pumps, heat-exchangers, water towers, motors, blowers, driers, etc. The high-pressure air distribution network supplies air to twenty user facilities located throughout Ames Research Center. Three of the compressors are equipped with cylinders to evacuate five 75-foot diameter vacuum spheres for three user facilities.

Steam Vacuum System (SVS)

The SVS provides the high mass flow vacuum conditions required for the operation of the Arc-Jet wind tunnel facilities. The steam is produced by a natural gas fired boiler with a capacity of 250,000 pounds of steam per hour and SVS pumping is accomplished by five steam ejector stages. Other major components of the SVS are two cooling towers, an effluent-air pollution control system, and a 160,000 gallon deionized water system.

Ames Vertical Gun Range (AVGR)

The AVGR is a unique ballistic facility used to simulate and study the physics and mechanics of planetary impact cratering phenomena. Ballistic technologies, utilizing light gas and gun powder, enable the acceleration of projectiles up to 2-centimeters diameter at relative velocities of approximately 8 km/sec. By varying the gun's angle of elevation with respect to the target vacuum tank, impact angles from 0 to 90 degrees with respect to the gravitational vector are possible.

Various photographic techniques are employed to document the experiments. The 16-mm movie cameras are capable of 104 frames per second and constitute the major means of recording. Additional capabilities include a framing camera (permitting 4,500,000 frames per second) and a pair of 35-mm framing cameras capable of recording movies in stereo at a mechanically synchronous rate of 60 frames per second. These recordings provide a highly accurate analytical growth history of the impact and cratering phenomena.

Experimental targets are contained within a 2.5 meter diameter vacuum chamber and can be accelerated vertically downward to change the net gravitational effect experienced by the target during crater formation. Variations of target construction include the placement of colored substrates to be used as markers prior to crater formation, thus providing information pertaining to the flow of subsurface materials.

Hypervelocity Free-Flight Facility (HFFF)

The HFFF is a ballistic facility used to measure the aerodynamic characteristics of models in free flight at extremely high speeds. It consists of three main sections: a set of model launching light gas guns, a test section with receiver tank, and a counterflow producing shock tube with a Mach 7 nozzle. Testing can be conducted using the gun and test section only (no-flow ballistic

range testing), or the shock tube and test section only (Mach 7, fixed-model wind tunnel testing), or all three sections simultaneously. The facility is capable of producing flights at velocities up to 10 km/sec and in atmospheres other than air (carbon dioxide, helium, hydrogen, xenon, krypton, argon, etc.).

Each of the four available light gas guns use smokeless powder to accelerate a plastic piston which in turn compresses hydrogen gas to propel the model. Variations in gun size permit launching models from 7 mm to 38 mm in diameter.

The test section has an instrumented length of 23 meters and contains 16 orthogonal shadowgraph stations. Thirty-two photographic units (16 horizontal and 16 vertical) are each equipped with Kerr cell shutters and spark discharge light sources. Photographic duration is 0.030 microseconds, which is obtained by shuttering the 0.20 microseconds spark discharge with the Kerr cell shutter. All aerodynamic data are derived from the photographic time history of the model motion. The test section is serviced by four mechanical vacuum pumps, one Roots blower, and two oil diffusion pumps. Minimum pressure achievable is of the order of 1-micron Hg absolute.

The Counter Flow Shock Tube is used to produce a small volume of high-pressure, high-temperature air to drive a Mach 7 air stream through the test section for a period of 0.020 to 0.040 seconds. The driver tube is constructed of breech sections of 406 mm naval guns and is 20 meters in length and 432 mm in diameter. The shock tube is 26 meters long and 305 mm in diameter. High-pressure plumbing is available to permit charging the driver tube to 10,000 psi.

Electric Arc Shock Tube (EAST)

The EAST is a unique facility featuring a capacitive electric-arc driver and the option of a 102 mm high-pressure driven tube or a 610 mm low-pressure driven tube. The facility is used for investigations such as radiation and ionization studies for outer planet entries, chemical reaction rate measurements, and diagnostics in high-energy flows requiring a high performance shock tube facility.

Shock velocities up to 40 km/sec can be attained with quick succession operation (3 - 5 tests per day) utilizing the conical arc chamber. Energy for the driver is supplied by a one megajoule capacitive storage system. It can be charged to a preset energy at either a 0 to 40 kV (1250 micro f) mode or a 0 to 20 kV mode (5000 micro f). The 102 mm high-pressure driven tube is 11 meters long and is designed for a 6000 psi working pressure. The 610 mm low-pressure driven tube is 21 meters long and designed for a working pressure of 200 psi. The facility has a variety of instrumentation with high speed oscilloscopes being the primary data recording devices, and is serviced by several vacuum pumps and a gas loading system for pressurizing the driver. The facility is operated through an automatic sequencer once the preliminary facility preparation is completed.

Arcjet Laboratory

The Arcjet Facilities, often referred to as Thermal Protection Simulation Facilities, are used for thermal protection systems evaluation, materials characterization, and design validation. Computer models can be used in conjunction with data provided by the Arcjet tests to predict the thermal performance of Thermal Protection Systems concepts in various flight trajectories. The facilities consist of five separate operational units: the Aerodynamic Heating Facility (AHF), the 2X9 in. Turbulent Flow Duct Facility, the 20-MW Panel Test Facility (PTF), the 60-MW Interaction Heating Facility (IHF), and the Direct Connect Arcjet Facility (DCAF). The Giant Planet Facility is currently being readied for reactivation. The arc-heated facilities are powered by either a 20-MW direct current power supply or a separate 60-MW dc power supply. The effluent gas stream discharges into five stage steam-ejector-driven vacuum system. All the facilities have high-pressure water available at flow rates up to 8000 gallons/min. The vacuum system, power supplies, and high-pressure water are common to test facilities in both Building N-234 and N-238.

National Full-Scale Aerodynamic Complex (NFAC)

The NFAC is a wind tunnel complex consisting of an Outdoor Aerodynamics Research Facility and a wind tunnel with two different size non-pressurized test sections which share a common drive system.

The 40 x 80 Foot Wind Tunnel is a closed circuit wind tunnel with a maximum test section speed of 300 knots. The test section is lined with sound absorptive material. Model installation is accomplished by means of a 35 ton capacity overhead crane. The tunnel is powered by six drive fans, each of which has a 40 foot diameter, 15 blade, variable pitch wooden propeller. Each fan is driven by an 18,000 horsepower (continuous), 22,500 horsepower (overload) synchronous electric motor. There are eight vane sets around the tunnel circuit which turn the flow at the corners, seal off the 80 x 120 Foot Wind Tunnel, direct airflow into the fan drive system, or are used to purge the tunnel of heated air and exhaust gases accumulated during the operation of turbojet or turbofan engines.

The 80 x 120 Foot Wind Tunnel is an open circuit wind tunnel with a maximum test section speed of 100 knots. The test section is lined with sound absorptive material. Model installation is accomplished by means of a 75 ton capacity Gantry crane. The tunnel is powered by the same tunnel drive system that powers the 40 x 80 Foot Wind Tunnel, and is converted to the open circuit configuration by appropriate positioning of four sets of vanes, which seal off the 40 x 80 Foot wind tunnel, open the discharge to outside air, and open the seal doors accessing the 80 x 120 Foot wind tunnel.

Only one test section can be operated at a time. Each test section has a primary model support system consisting of three moveable struts mounted on a turntable fixed to a "Floating Frame" system of beam balances used to measure six components of forces and moments on the model.

Outdoor Aerodynamic Research Facility (OARF)

The OARF is an open-air test facility consisting of a model mounting test pad, underground control room housing the data acquisition system, remote model controls and an observation platform. A separate building houses a 150 Hz and a 400 Hz power supply. Other support equipment includes a weather station, an underground fuel system, and a 75 ton gantry crane. The model mounting test pad consists of a 200 foot diameter asphalt pad with a 100 foot square concrete slab at the center. Located at the center of the concrete slab is a 36 x 36 foot pit, which contains a model support system capable of handling models or aircraft sized for installation in the NFAC wind tunnels.

7X10 Wind Tunnel Number One

The 7 x 10 Foot Wind Tunnel Number One is a closed circuit atmospheric tunnel. The tunnel is powered by an eight blade twenty-eight foot diameter fan driven by a 1600 horsepower, variable speed drive motor. Wind tunnel speed is continuously variable from zero to two hundred and twenty knots. The test section has a turntable fixed to a "Floating Frame" system of beam balances used to measure six components of forces and moments on the model.

Blade Inspection/Storage Facility

The Blade Inspection/Storage Facility, located in N207A, is used for the reconditioning of wind tunnel compressor blades after removal from a compressor and for the proper storage of the blades in preparation for reinstallation into a compressor. The facility houses the sanding equipment, balancing equipment, and storage of the wind tunnel compressor blades. The function of this facility is to restore/repair blades, balance them, and store them in preparation for use. Also, the maintenance of records for the blades is a function of this facility.

Sting Assembly/Storage Facility

Sting Assembly/Storage Facility, located in N207A, is used for the storage and assembly of stings prior to entry into wind tunnel test sections. The function of this facility is to store in functional condition the stings and adapters used in the wind tunnels and to assemble, document, and deliver functional assemblies to the test section. The facility inspects and repairs these components and maintains a database on all items in the facility.

High Voltage Electrical System

The High Voltage Electrical System consists of the power distribution equipment used to provide electricity to the aerospace test and support facilities. The system operates at voltages up to 115 KV and consists of switch gears, breakers, transformers, cables, and ancillary safety and operating systems that are located in various sub-yards throughout the center.

Industrial Wastewater Treatment Facility

The Industrial Wastewater Treatment Facility (IWTF), N271, provides microfiltration and reverse osmosis treatment of industrial wastewater effluent from the Unitary cooling tower, the Arcjet cooling tower, and the Arcjet boiler. Treated groundwater is also processed through N271. The treated waters are then reused as make-up water for the Unitary cooling tower, the Arcjet cooling tower, and the Arcjet boiler. The IWTF is operated primarily by the Ames Environmental Office (Code QE). However, the contractor would be responsible for repair, maintenance, and back-up and/or second/third shift operations.